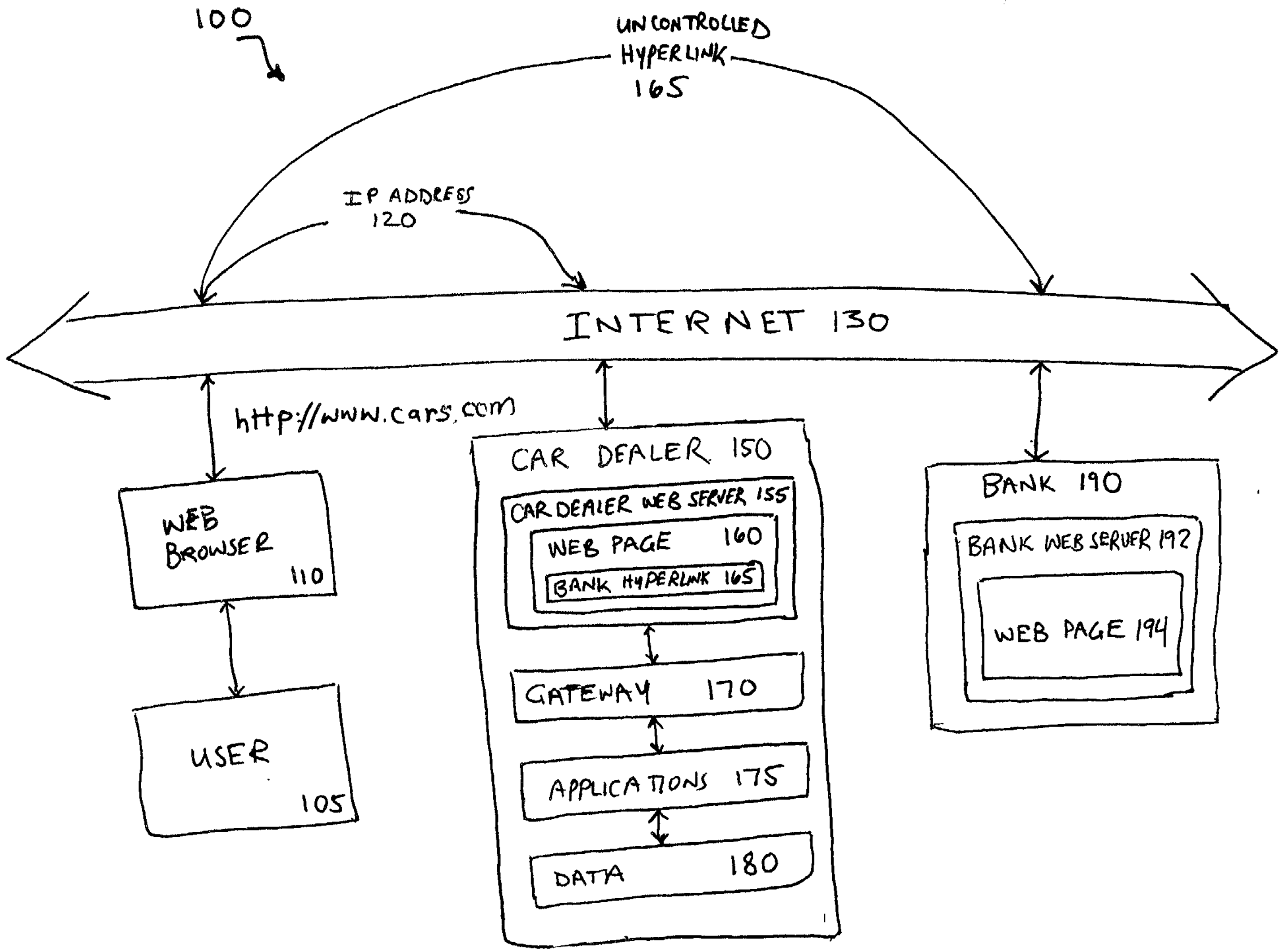


Figure 1 (PRIOR ART)

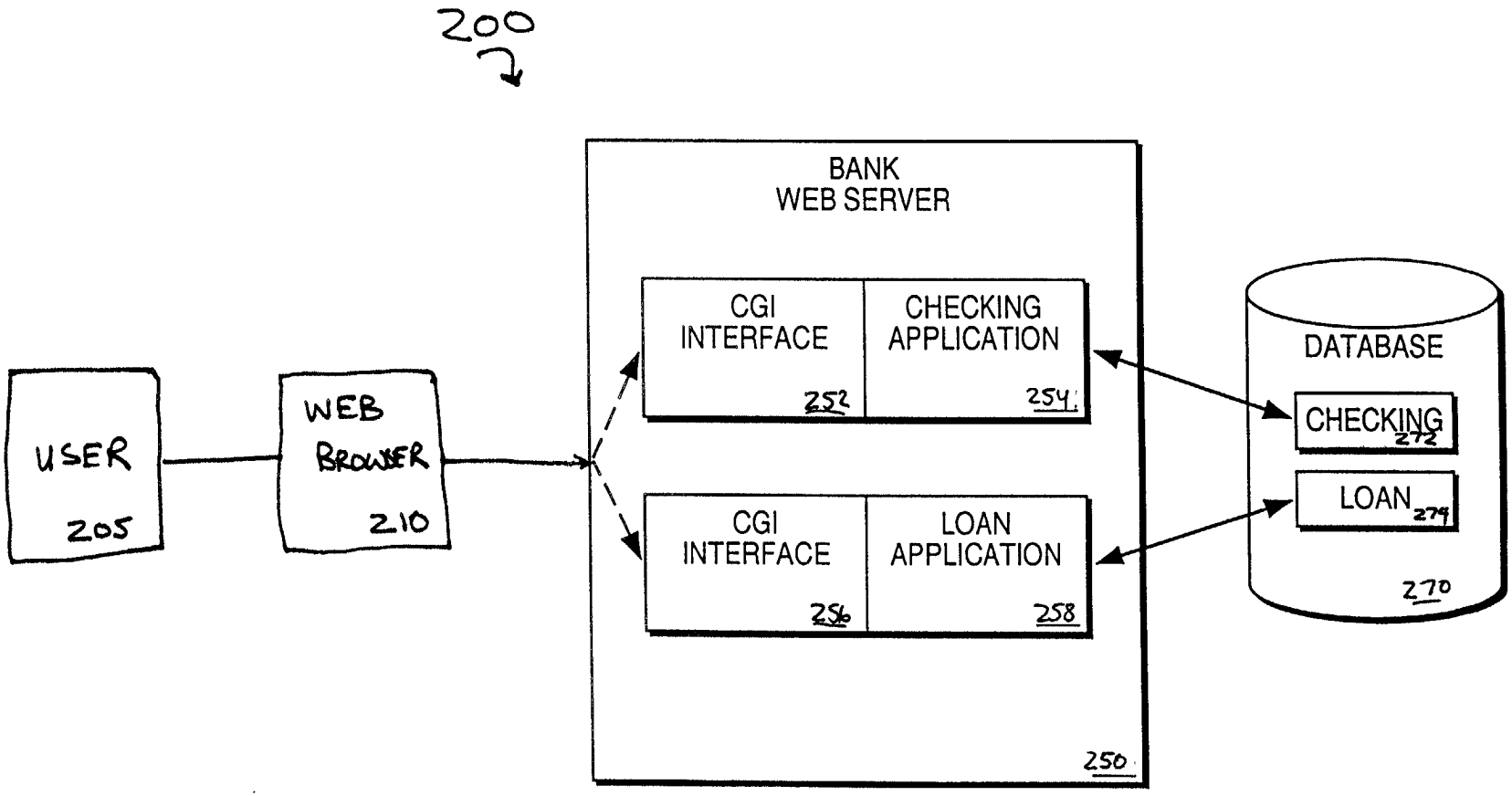


Figure 2 (PRIOR ART)

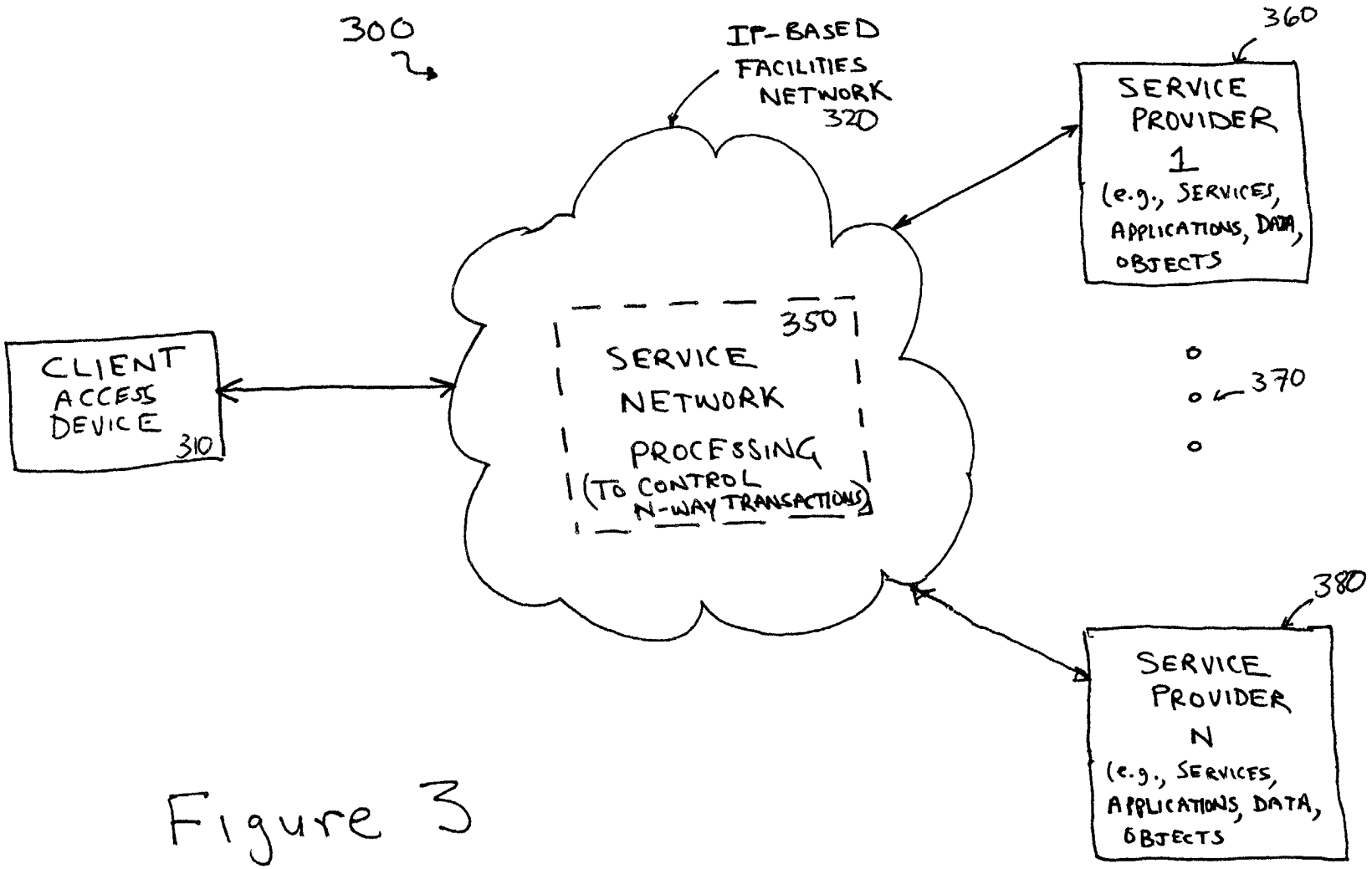

300
IP-BASED FACILITIES NETWORK 320
360
SERVICE PROVIDER 1
(e.g., SERVICES, APPLICATIONS, DATA, OBJECTS
350
SERVICE NETWORK PROCESSING
(TO CONTROL N-WAY TRANSACTIONS)
CLIENT ACCESS DEVICE 310
370
380
SERVICE PROVIDER N
(e.g., SERVICES, APPLICATIONS, DATA, OBJECTS

Figure 3

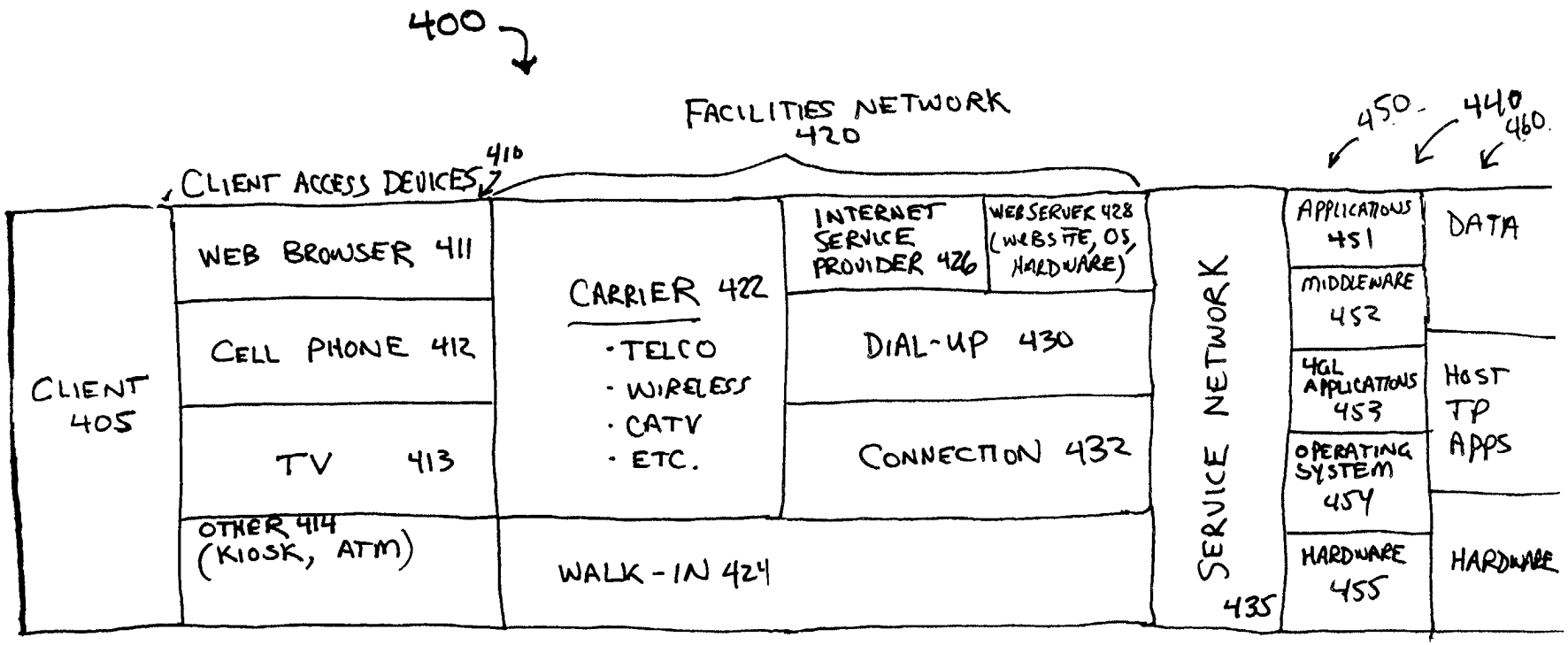


Figure 4

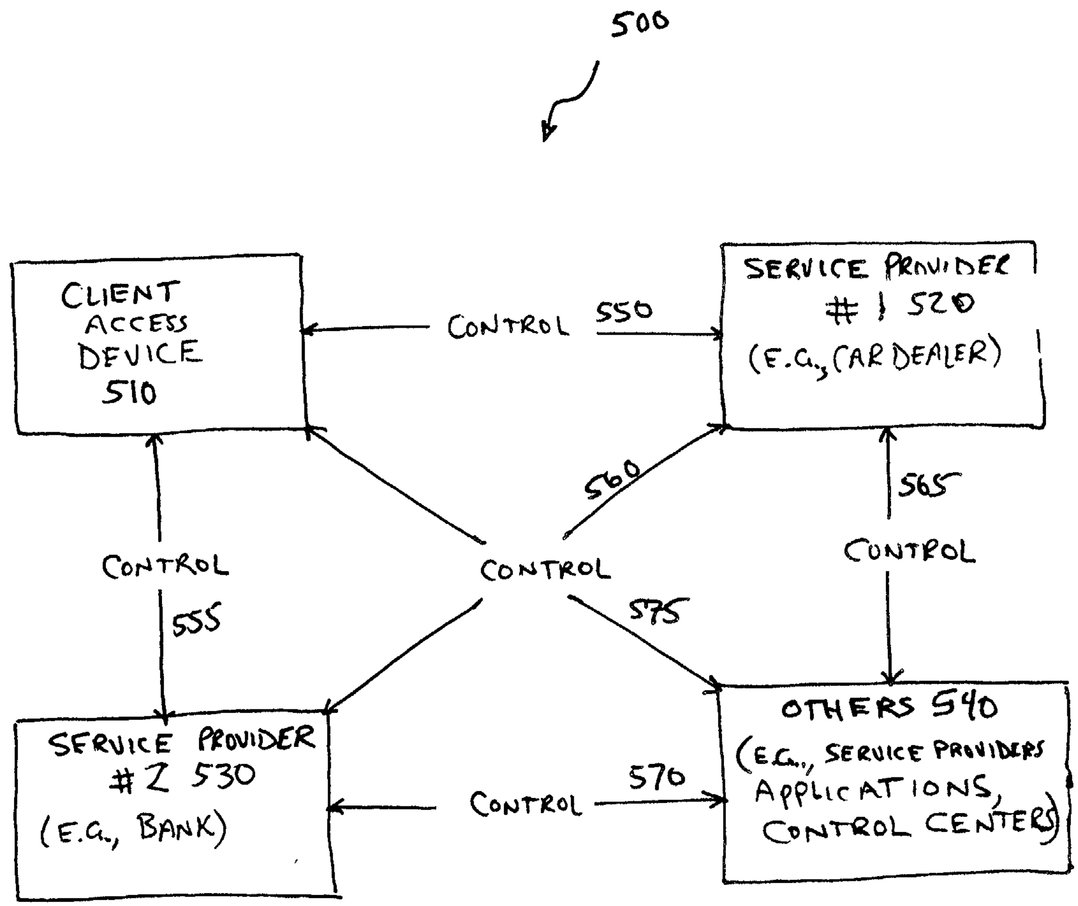

500
CLIENT
ACCESS
DEVICE
510
CONTROL 550
SERVICE PROVIDER
#1 520
(E.G., CAR DEALER)
560
565
CONTROL
CONTROL
CONTROL
555
575
SERVICE PROVIDER
#2 530
(E.G., BANK)
CONTROL 570
OTHERS 540
(E.G., SERVICE PROVIDERS
APPLICATIONS,
CONTROL CENTERS)

Figure 5

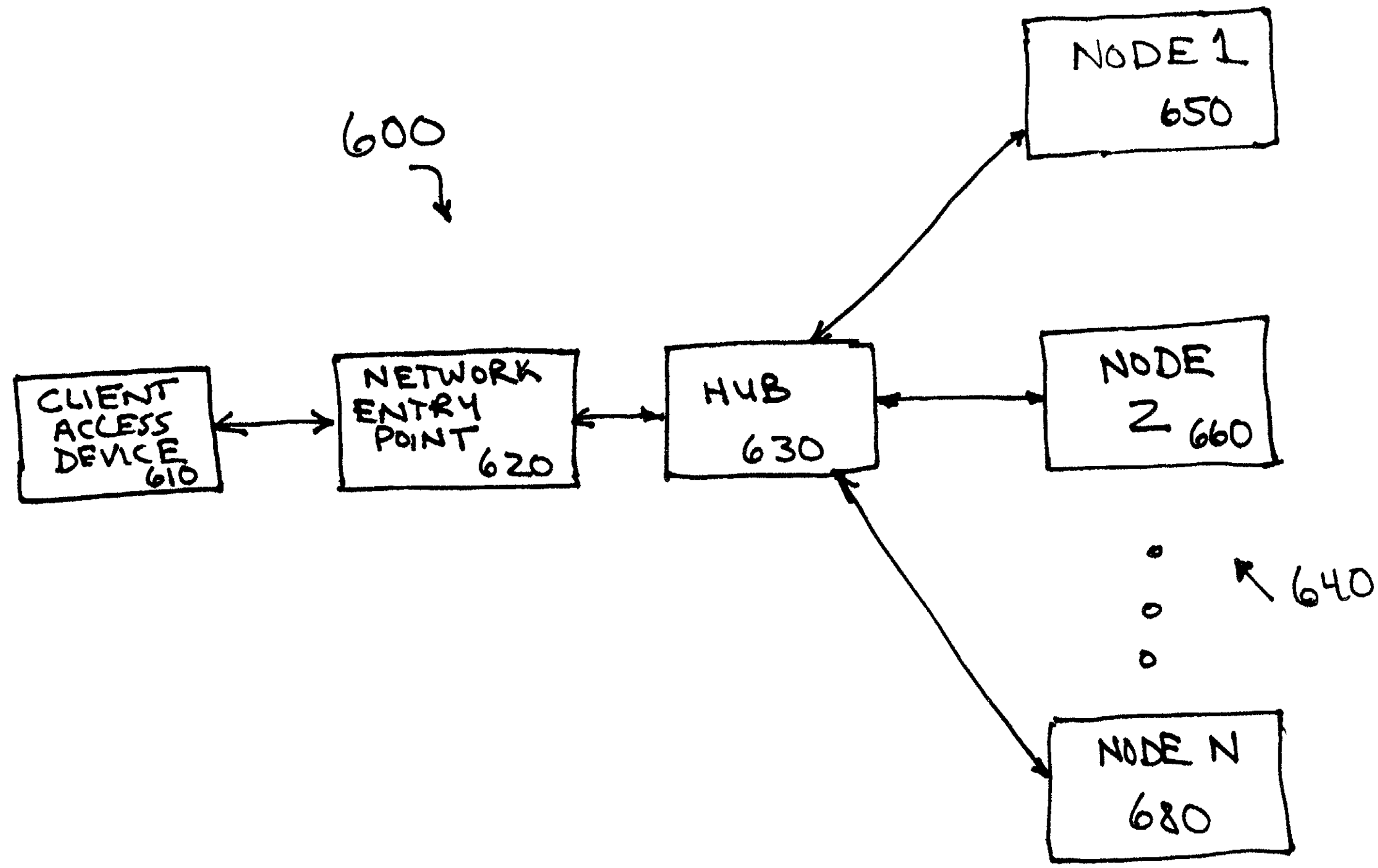

600
CLIENT ACCESS DEVICE 610
NETWORK ENTRY POINT 620
HUB 630
NODE 1 650
NODE 2 660
NODE N 680
640

Figure 6

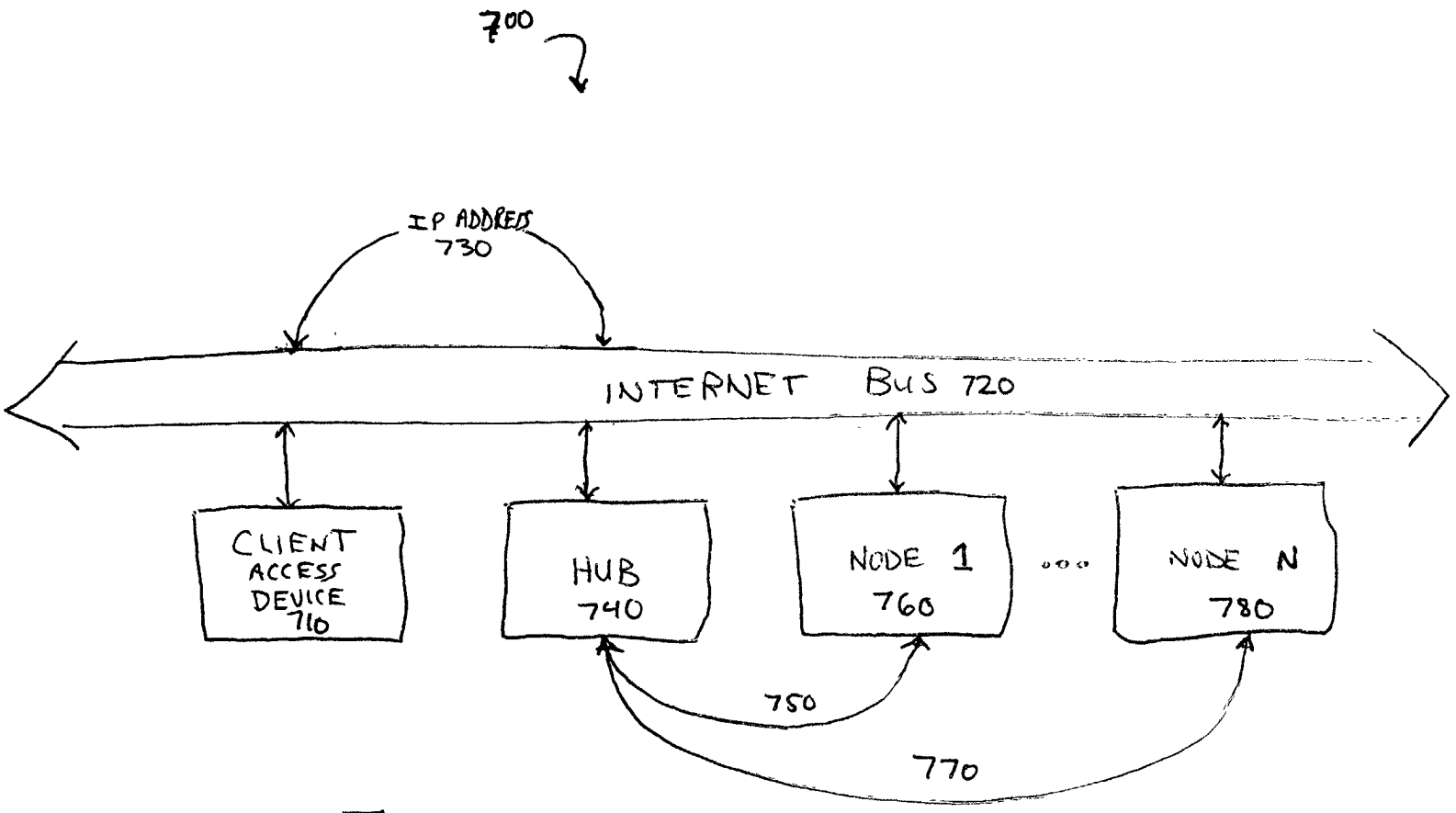

700
IP ADDRESS
730
INTERNET BUS 720
CLIENT ACCESS DEVICE 710
HUB 740
NODE 1 760
...
NODE N 780
750
770

Figure 7

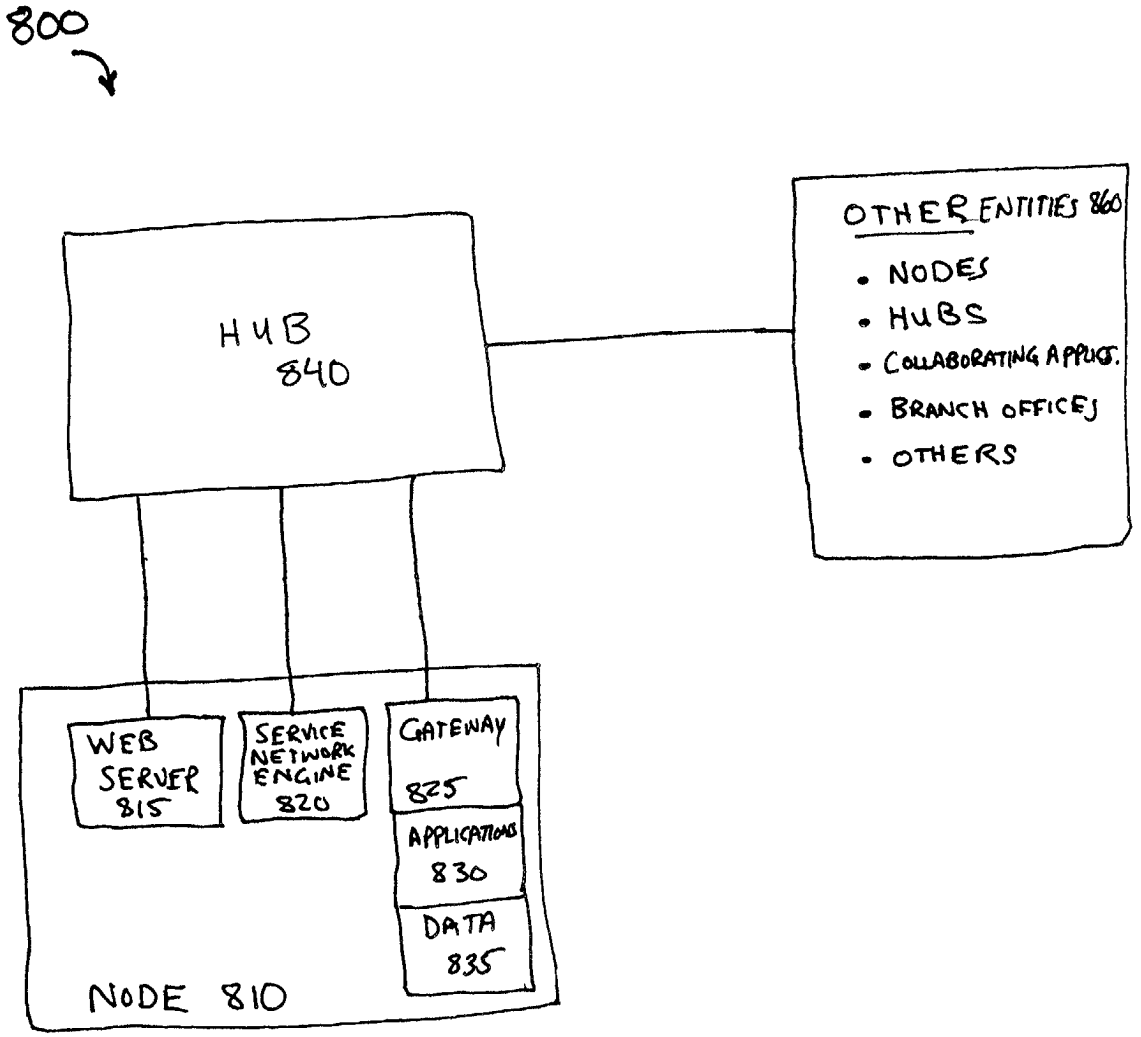


Figure 8

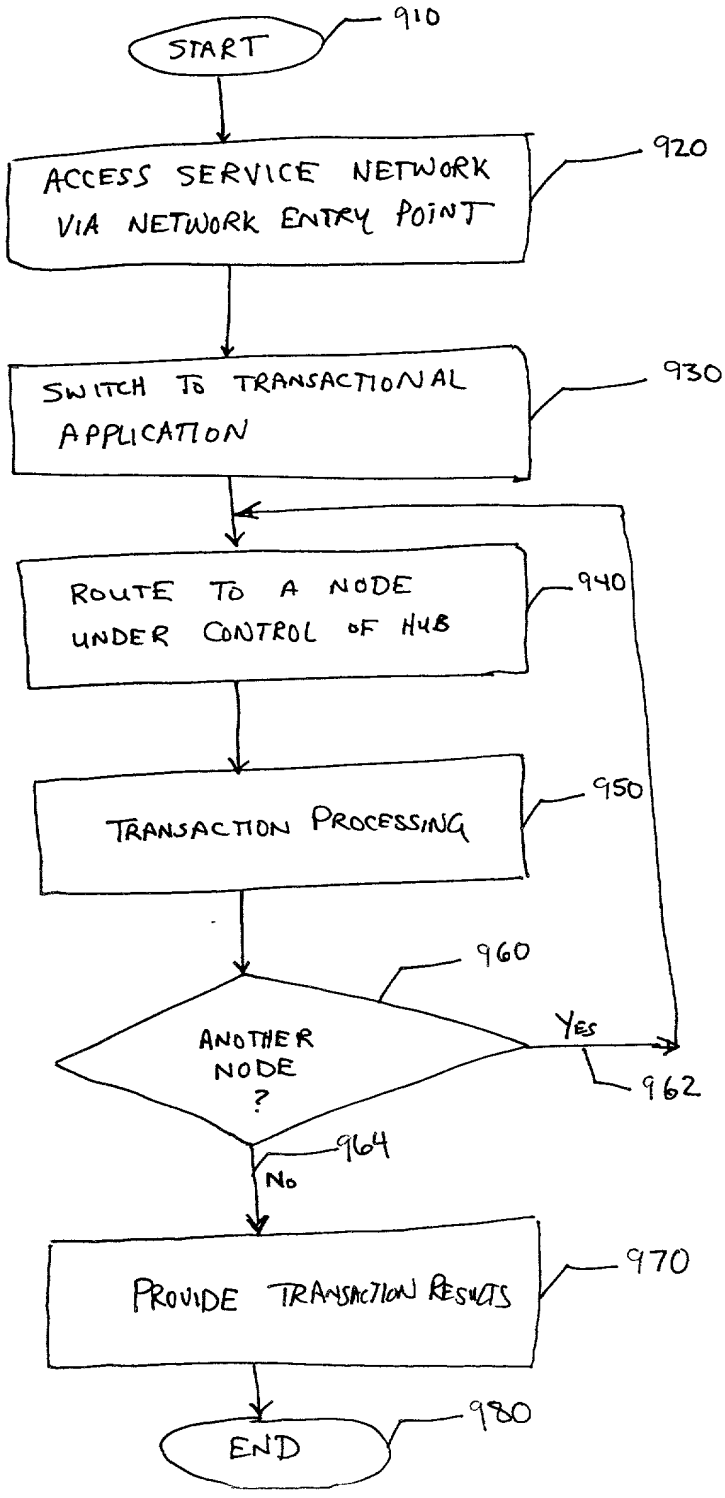

START
910
ACCESS SERVICE NETWORK VIA NETWORK ENTRY POINT
920
SWITCH TO TRANSACTIONAL APPLICATION
930
ROUTE TO A NODE UNDER CONTROL OF HUB
940
TRANSACTION PROCESSING
950
960
ANOTHER NODE ?
Yes
962
964
No
PROVIDE TRANSACTION RESULTS
970
END
980

FIGURE 9

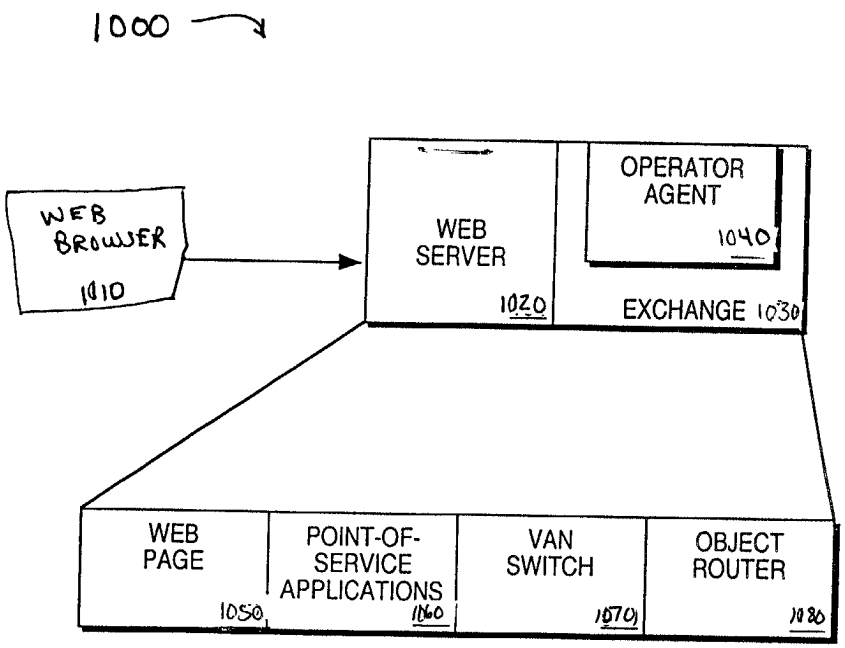


Figure 10

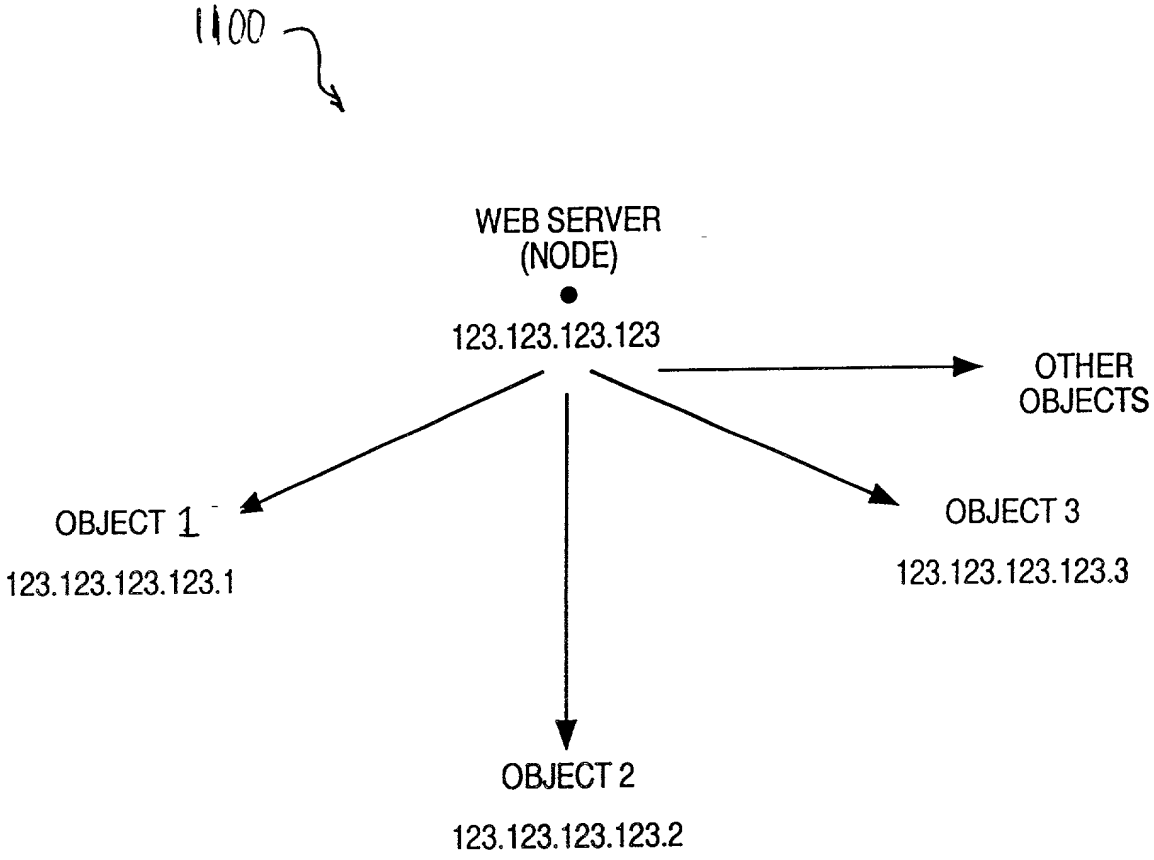
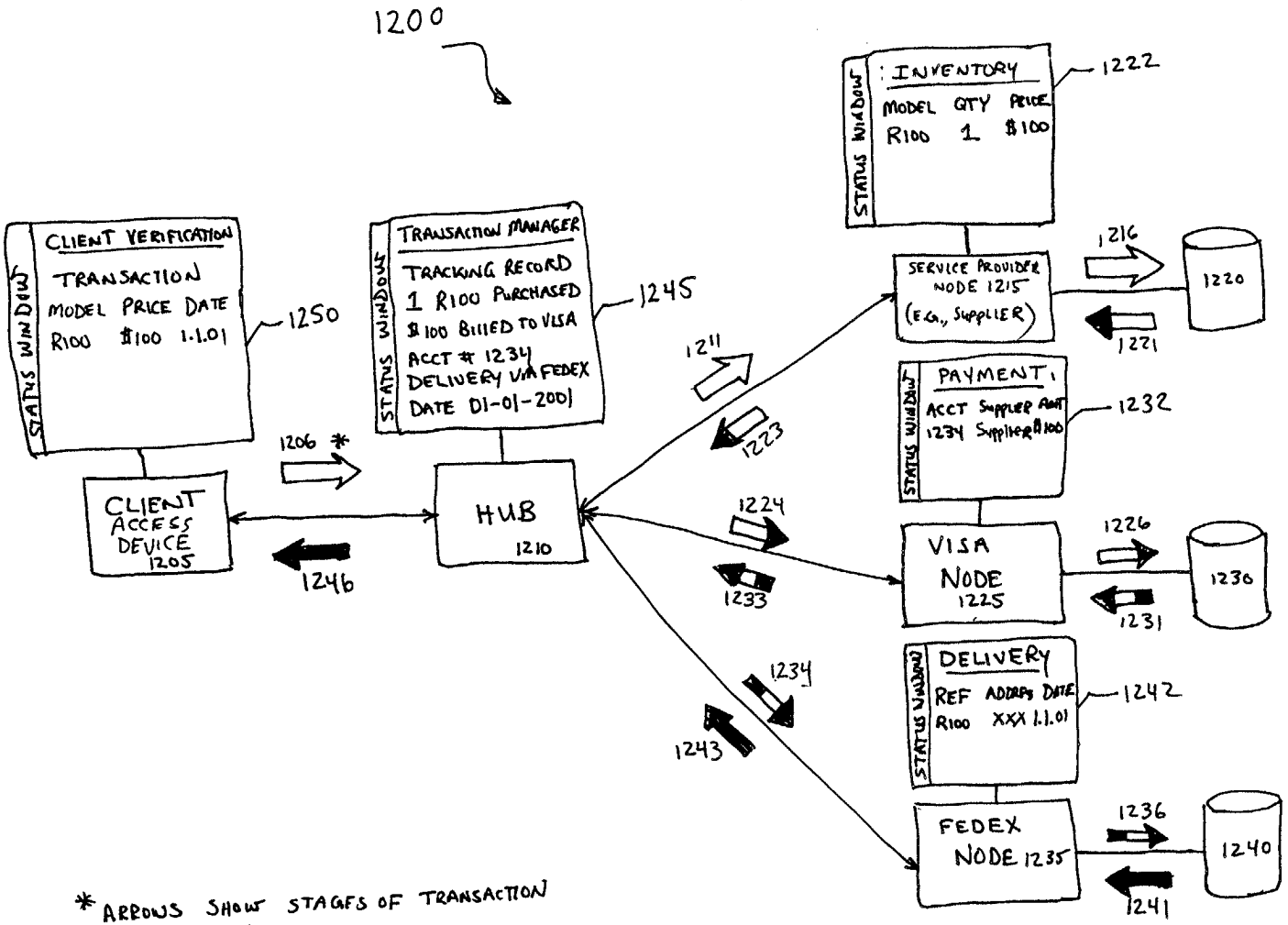

1100
WEB SERVER
(NODE)
123.123.123.123
OTHER
OBJECTS
OBJECT 1
123.123.123.123.1
OBJECT 3
123.123.123.123.3
OBJECT 2
123.123.123.123.2

FIG. 11



* ARROWS SHOW STAGES OF TRANSACTION VERIFICATION

FIGURE 12

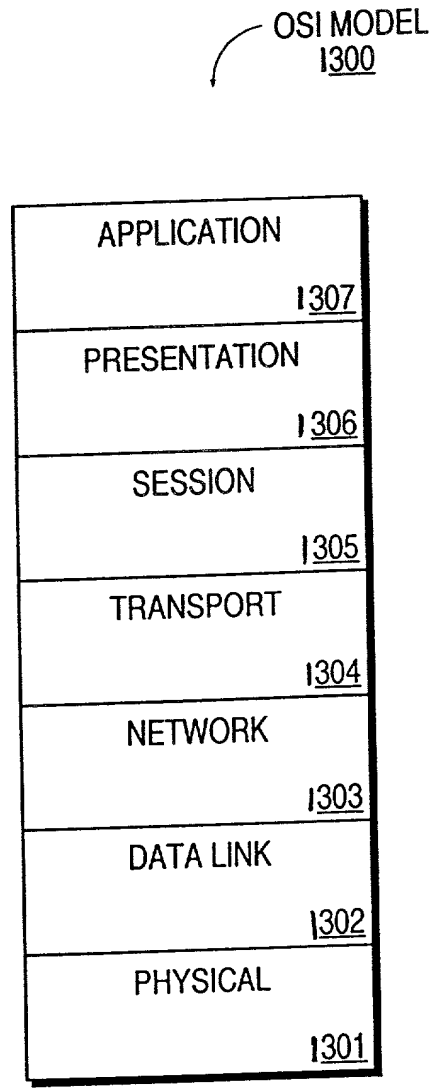

OSI MODEL
1300
APPLICATION
1307
PRESENTATION
1306
SESSION
1305
TRANSPORT
1304
NETWORK
1303
DATA LINK
1302
PHYSICAL
1301

FIG. 13

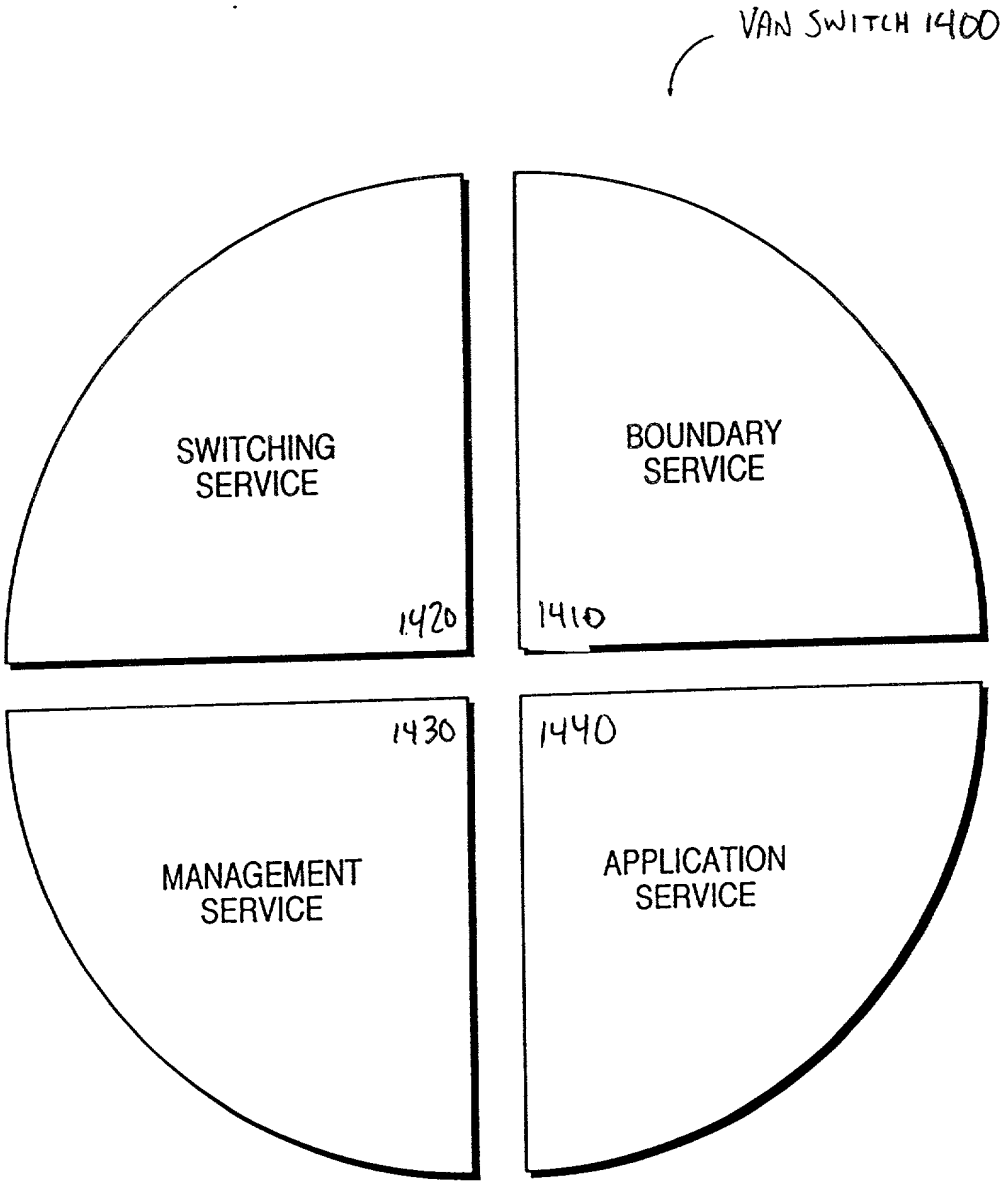

VAN SWITCH 1400
SWITCHING SERVICE
1420
BOUNDARY SERVICE
1410
1430
MANAGEMENT SERVICE
1440
APPLICATION SERVICE

FIG. 14

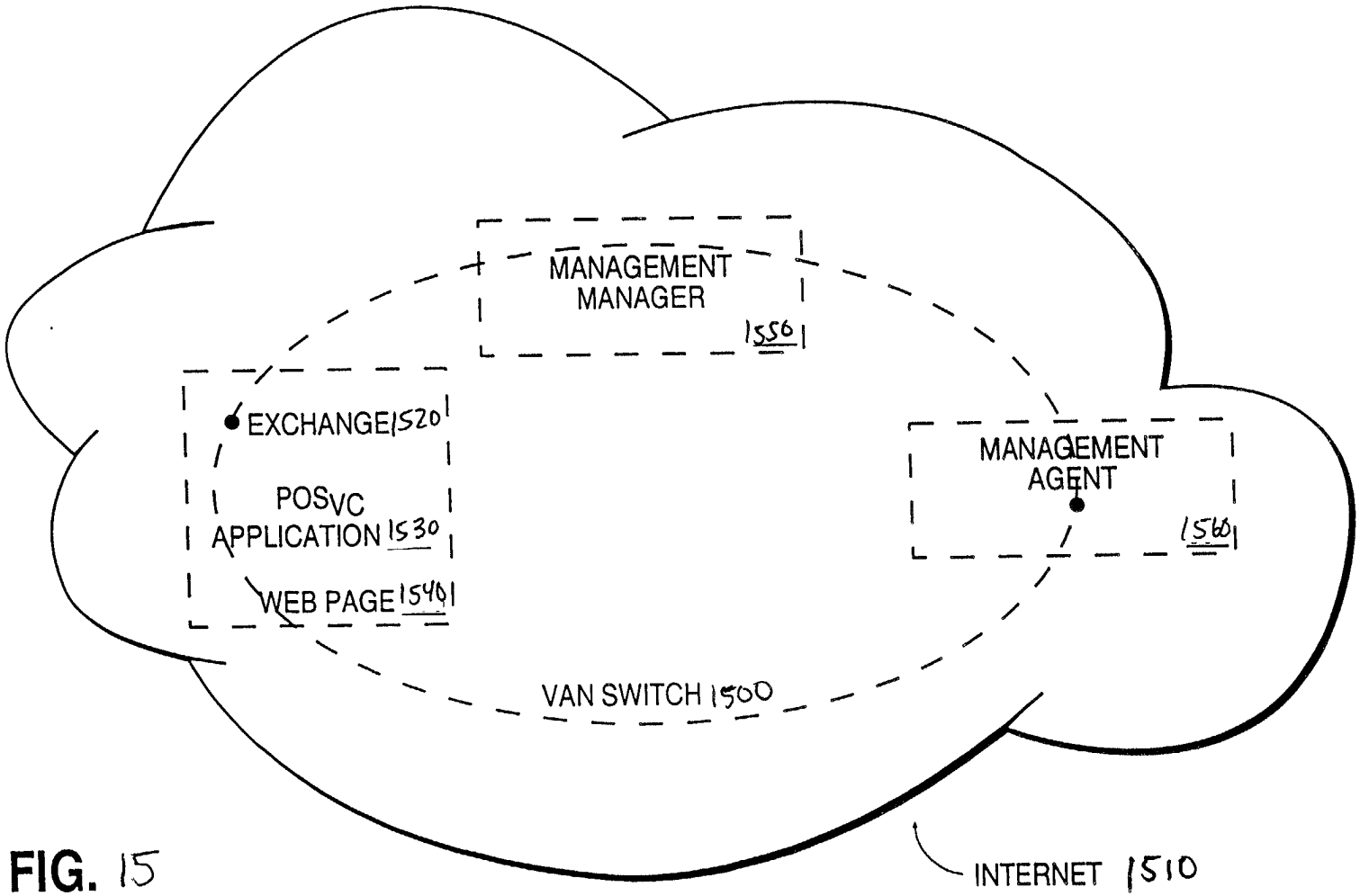


FIG. 15

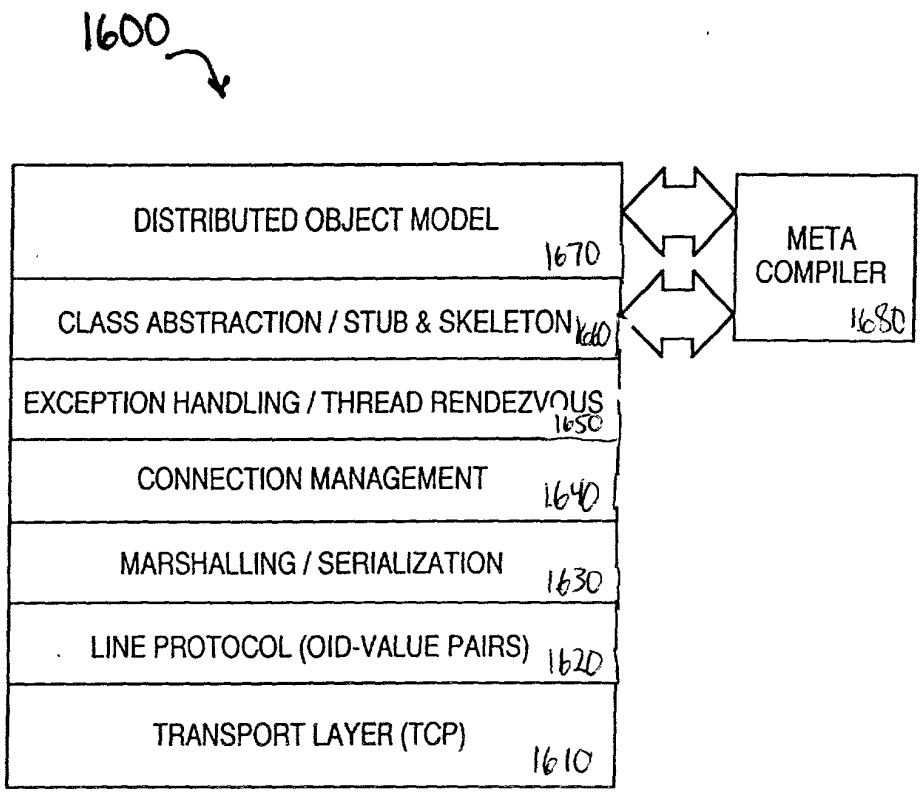

1600
DISTRIBUTED OBJECT MODEL
1670
CLASS ABSTRACTION / STUB & SKELETON
1660
EXCEPTION HANDLING / THREAD RENDEZVOUS
1650
CONNECTION MANAGEMENT
1640
MARSHALLING / SERIALIZATION
1630
LINE PROTOCOL (OID-VALUE PAIRS)
1620
TRANSPORT LAYER (TCP)
1610
META COMPILER
1680

FIG. 16

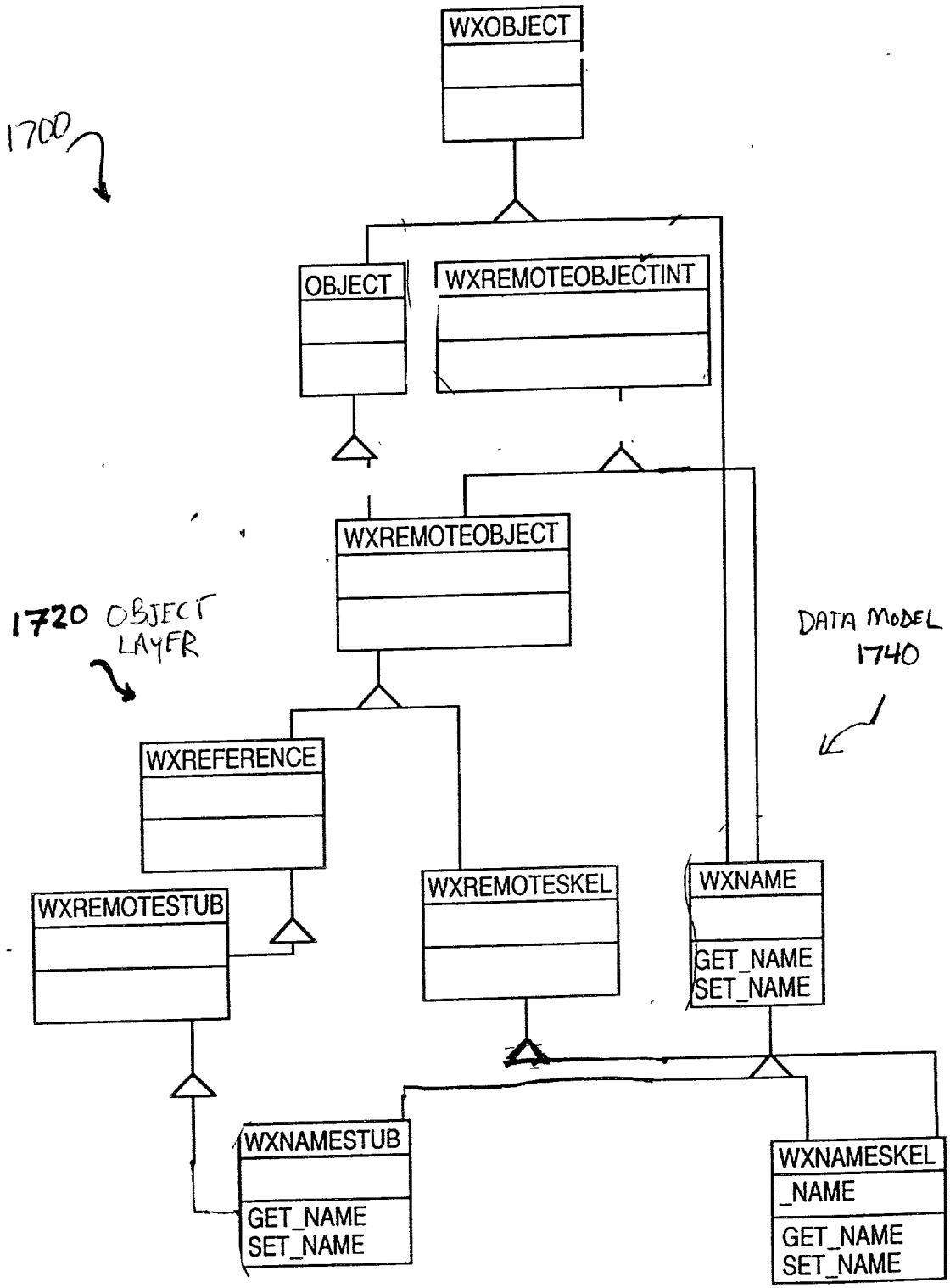

1700
WXOBJECT
OBJECT
WXREMOTEOBJECTINT
WXREMOTEOBJECT
1720 OBJECT LAYER
DATA MODEL 1740
WXREFERENCE
WXREMOTESTUB
WXREMOTESKEL
WXNAME
GET_NAME
SET_NAME
WXNAMESTUB
GET_NAME
SET_NAME
WXNAMESKEL
_NAME
GET_NAME
SET_NAME

FIG. 17

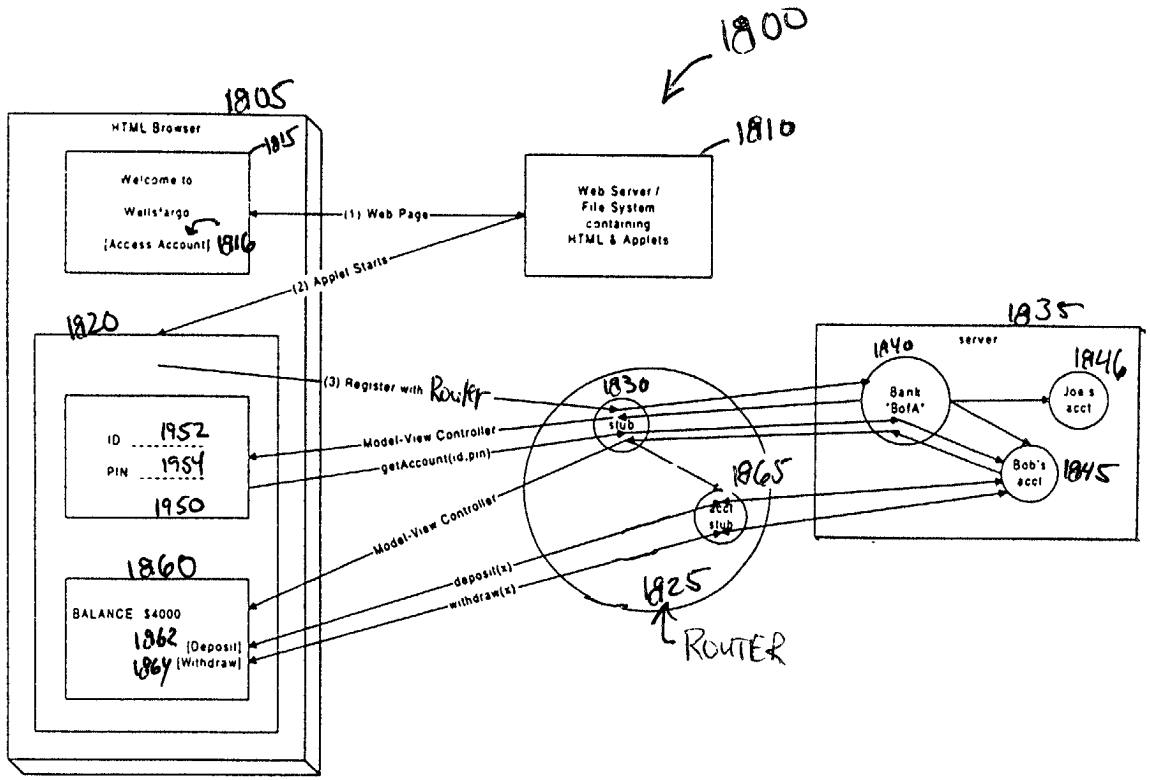

1800
1805
HTML Browser
1815
Welcome to
Wells'argo
[Access Account] 1816
1810
Web Server /
File System
containing
HTML & Applets
(1) Web Page
(2) Applet Starts
1820
(3) Register with Router
ID 1952
PIN 1954
1950
Model-View Controller
getAccount(id,pin)
1830
stub
1835
server
1840
Bank
'BofA'
1846
Joe's
acct
1845
Bob's
acct
1865
acct
stub
Model-View Controller
deposit(x)
withdraw(x)
1860
BALANCE $4000
1862 [Deposit]
1864 [Withdraw]
1825
ROUTER

Figure 18

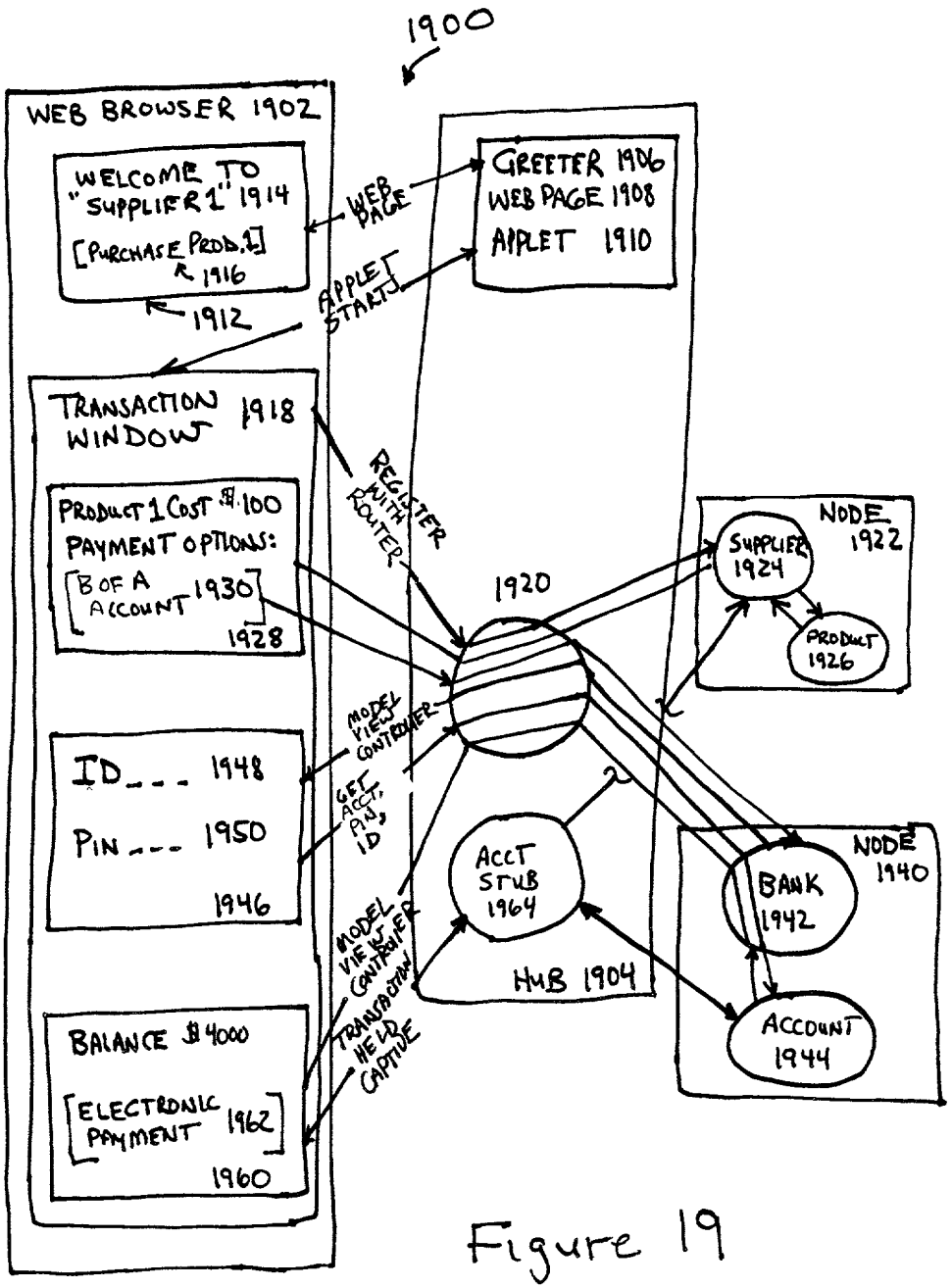

1900
WEB BROWSER 1902
WELCOME TO "SUPPLIER 1" 1914
[PURCHASE PROD. 1] 1916
1912
WEB PAGE
APPLET START
GREETER 1906
WEB PAGE 1908
APPLET 1910
TRANSACTION WINDOW 1918
PRODUCT 1 COST $100
PAYMENT OPTIONS:
[B OF A ACCOUNT 1930]
1928
REGISTER WITH ROUTER
1920
NODE 1922
SUPPLIER 1924
PRODUCT 1926
MODEL VIEW CONTROLLER
ID___ 1948
PIN___ 1950
1946
GET ACCT, PIN, ID
ACCT STUB 1964
HUB 1904
NODE 1940
BANK 1942
ACCOUNT 1944
MODEL VIEW CONTROLLER
TRANSACTION HELD CAPTURE
BALANCE $4000
[ELECTRONIC PAYMENT 1962]
1960

Figure 19

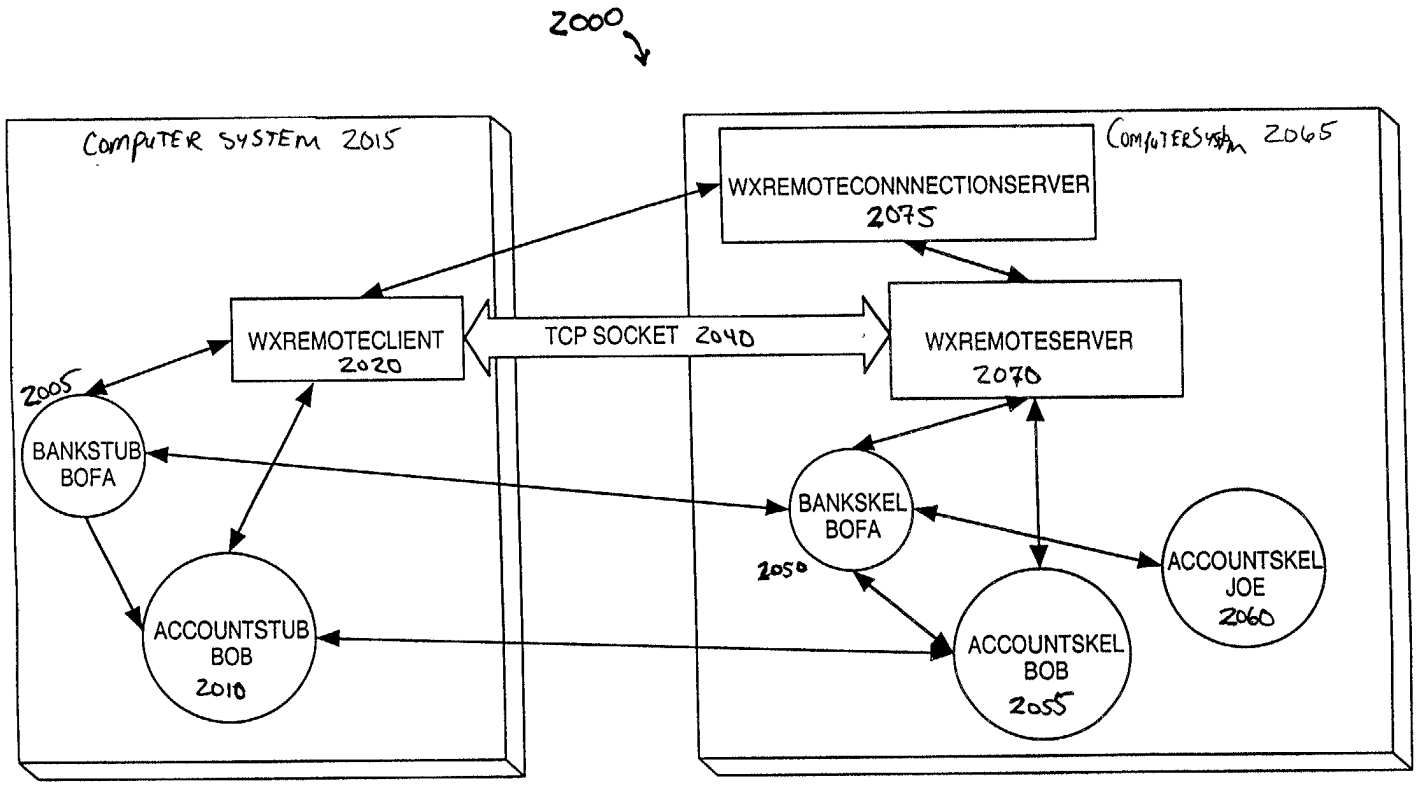


FIG. 20

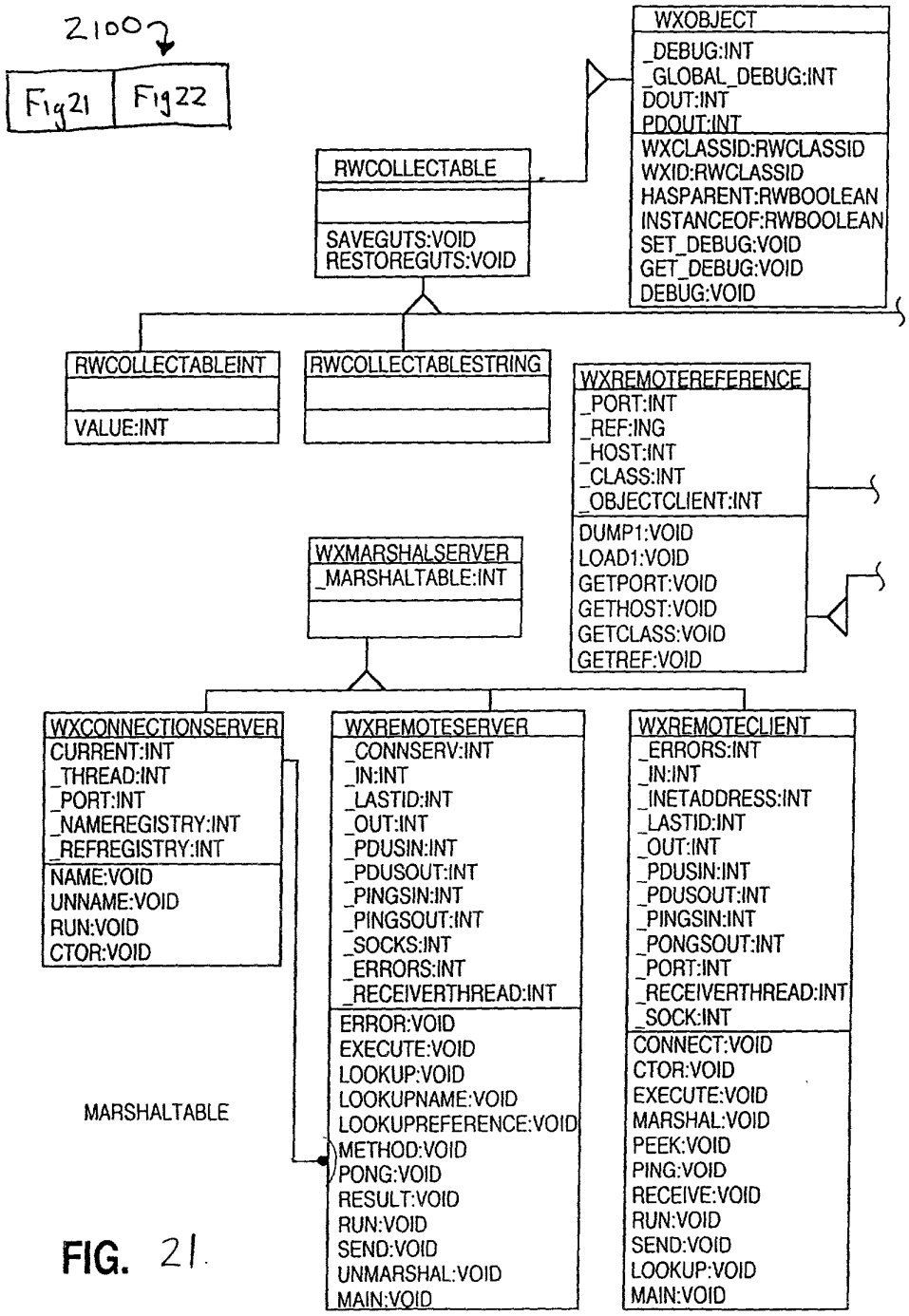

2100
Fig 21
Fig 22
WXOBJECT
_DEBUG:INT
_GLOBAL_DEBUG:INT
DOUT:INT
PDOUT:INT
WXCLASSID:RWCLASSID
WXID:RWCLASSID
HASPARENT:RWBOOLEAN
INSTANCEOF:RWBOOLEAN
SET_DEBUG:VOID
GET_DEBUG:VOID
DEBUG:VOID
RWCOLLECTABLE
SAVEGUTS:VOID
RESTOREGUTS:VOID
RWCOLLECTABLEINT
VALUE:INT
RWCOLLECTABLESTRING
WXREMOTEREFERENCE
_PORT:INT
_REF:ING
_HOST:INT
_CLASS:INT
_OBJECTCLIENT:INT
DUMP1:VOID
LOAD1:VOID
GETPORT:VOID
GETHOST:VOID
GETCLASS:VOID
GETREF:VOID
WXMARSHALSERVER
_MARSHALTABLE:INT
WXCONNECTIONSERVER
CURRENT:INT
_THREAD:INT
_PORT:INT
_NAMEREGISTRY:INT
_REFREGISTRY:INT
NAME:VOID
UNNAME:VOID
RUN:VOID
CTOR:VOID
WXREMOTESERVER
_CONNSERV:INT
_IN:INT
_LASTID:INT
_OUT:INT
_PDUSIN:INT
_PDUSOUT:INT
_PINGSIN:INT
_PINGSOUT:INT
_SOCKS:INT
_ERRORS:INT
_RECEIVERTHREAD:INT
ERROR:VOID
EXECUTE:VOID
LOOKUP:VOID
LOOKUPNAME:VOID
LOOKUPREFERENCE:VOID
METHOD:VOID
PONG:VOID
RESULT:VOID
RUN:VOID
SEND:VOID
UNMARSHAL:VOID
MAIN:VOID
WXREMOTECLIENT
_ERRORS:INT
_IN:INT
_INETADDRESS:INT
_LASTID:INT
_OUT:INT
_PDUSIN:INT
_PDUSOUT:INT
_PINGSIN:INT
_PONGSOUT:INT
_PORT:INT
_RECEIVERTHREAD:INT
_SOCK:INT
CONNECT:VOID
CTOR:VOID
EXECUTE:VOID
MARSHAL:VOID
PEEK:VOID
PING:VOID
RECEIVE:VOID
RUN:VOID
SEND:VOID
LOOKUP:VOID
MAIN:VOID
MARSHALTABLE

FIG. 21.

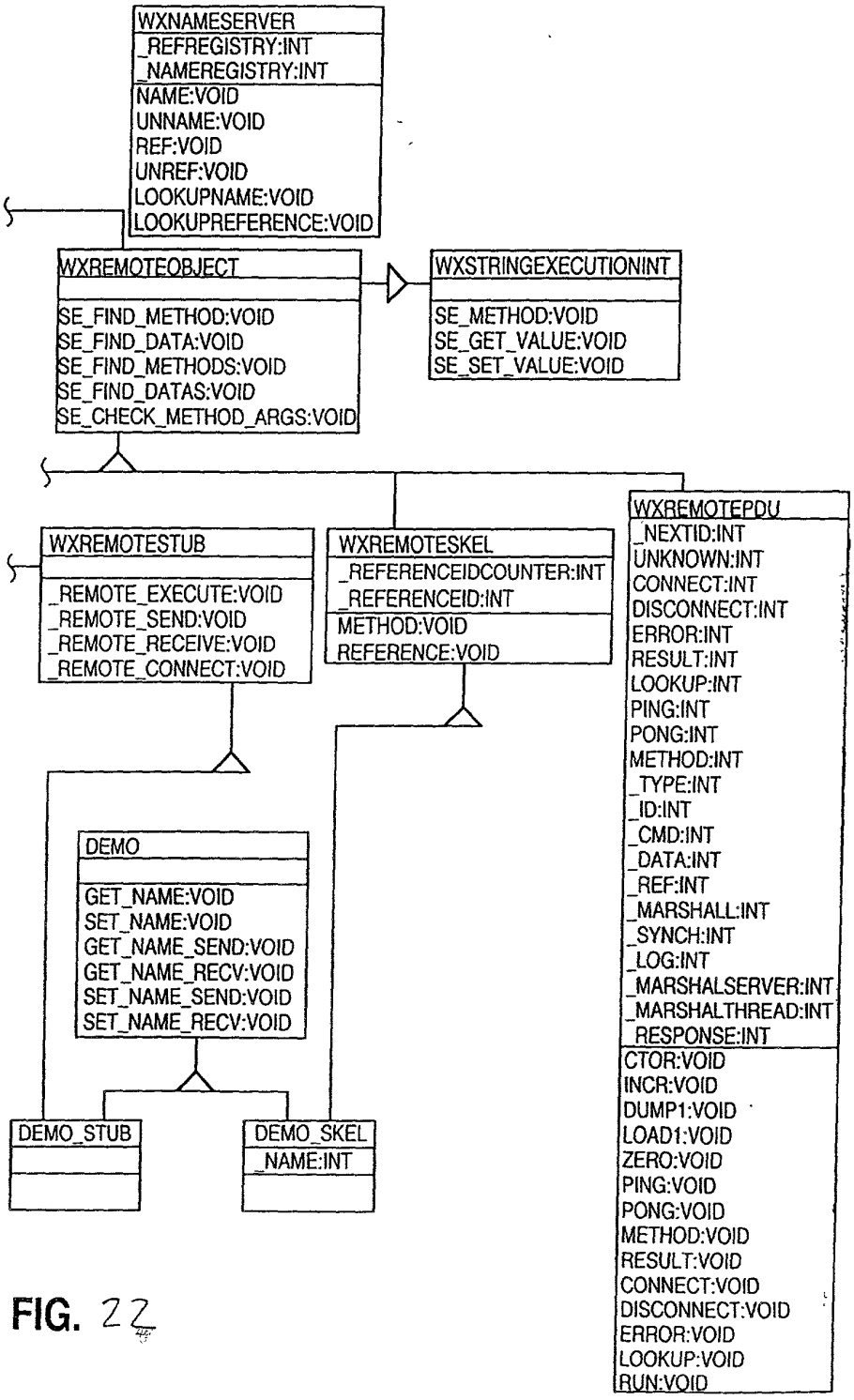

WXNAMESERVER
_REFREGISTRY:INT
_NAMEREGISTRY:INT
NAME:VOID
UNNAME:VOID
REF:VOID
UNREF:VOID
LOOKUPNAME:VOID
LOOKUPREFERENCE:VOID
WXREMOTEOBJECT
SE_FIND_METHOD:VOID
SE_FIND_DATA:VOID
SE_FIND_METHODS:VOID
SE_FIND_DATAS:VOID
SE_CHECK_METHOD_ARGS:VOID
WXSTRINGEXECUTIONINT
SE_METHOD:VOID
SE_GET_VALUE:VOID
SE_SET_VALUE:VOID
WXREMOTESTUB
_REMOTE_EXECUTE:VOID
_REMOTE_SEND:VOID
_REMOTE_RECEIVE:VOID
_REMOTE_CONNECT:VOID
WXREMOTESKEL
_REFERENCEIDCOUNTER:INT
_REFERENCEID:INT
METHOD:VOID
REFERENCE:VOID
WXREMOTEPDU
_NEXTID:INT
UNKNOWN:INT
CONNECT:INT
DISCONNECT:INT
ERROR:INT
RESULT:INT
LOOKUP:INT
PING:INT
PONG:INT
METHOD:INT
_TYPE:INT
_ID:INT
_CMD:INT
_DATA:INT
_REF:INT
_MARSHALL:INT
_SYNCH:INT
_LOG:INT
_MARSHALSERVER:INT
_MARSHALTHREAD:INT
_RESPONSE:INT
CTOR:VOID
INCR:VOID
DUMP1:VOID
LOAD1:VOID
ZERO:VOID
PING:VOID
PONG:VOID
METHOD:VOID
RESULT:VOID
CONNECT:VOID
DISCONNECT:VOID
ERROR:VOID
LOOKUP:VOID
RUN:VOID
DEMO
GET_NAME:VOID
SET_NAME:VOID
GET_NAME_SEND:VOID
GET_NAME_RECV:VOID
SET_NAME_SEND:VOID
SET_NAME_RECV:VOID
DEMO_STUB
DEMO_SKEL
_NAME:INT

FIG. 22

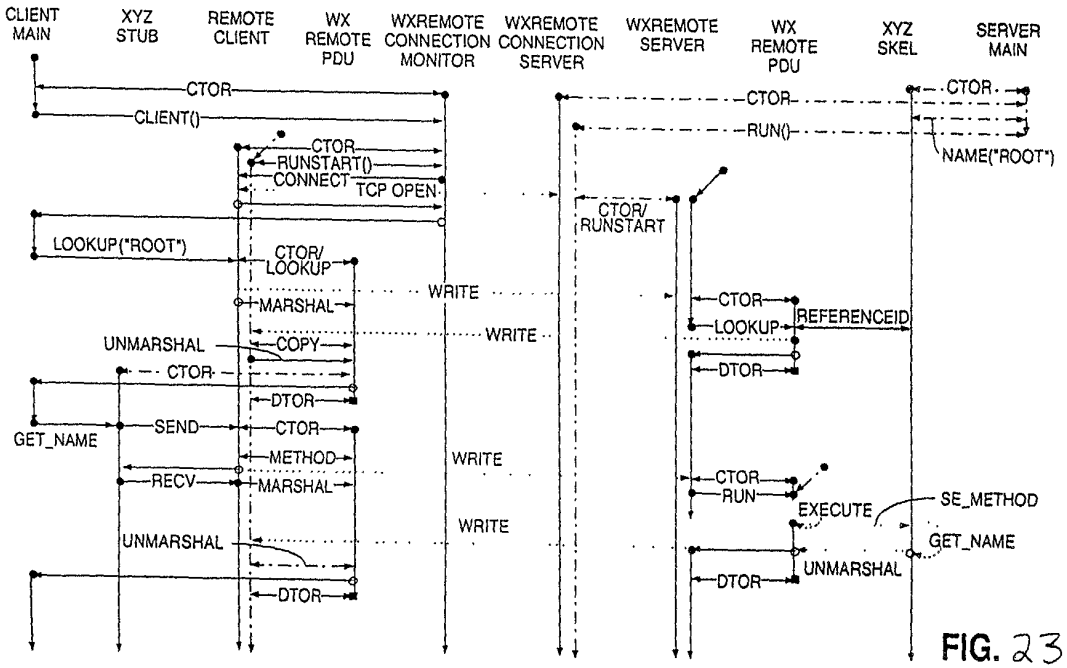

CLIENT MAIN
XYZ STUB
REMOTE CLIENT
WX REMOTE PDU
WXREMOTE CONNECTION MONITOR
WXREMOTE CONNECTION SERVER
WXREMOTE SERVER
WX REMOTE PDU
XYZ SKEL
SERVER MAIN
CTOR
CLIENT()
CTOR
RUNSTART()
CONNECT
TCP OPEN
CTOR
RUN()
NAME("ROOT")
CTOR/ RUNSTART
LOOKUP("ROOT")
CTOR/ LOOKUP
WRITE
MARSHAL
CTOR
LOOKUP
REFERENCEID
WRITE
UNMARSHAL
COPY
DTOR
CTOR
DTOR
GET_NAME
SEND
CTOR
METHOD
WRITE
CTOR
RECV
MARSHAL
RUN
EXECUTE
SE_METHOD
WRITE
UNMARSHAL
GET_NAME
UNMARSHAL
DTOR
DTOR

FIG. 23

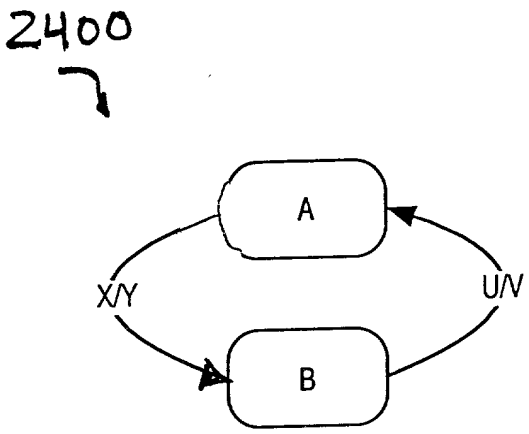


FIG. 24

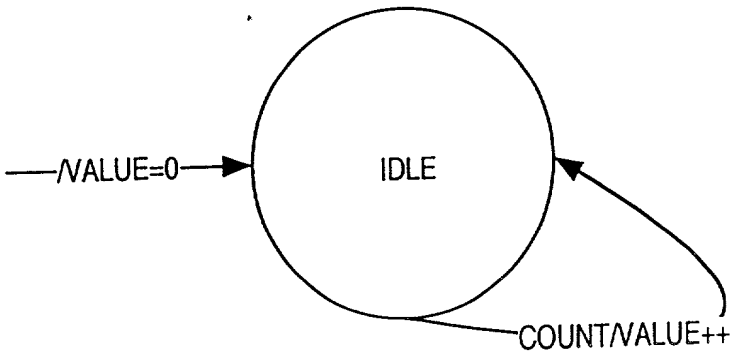


FIG. 25

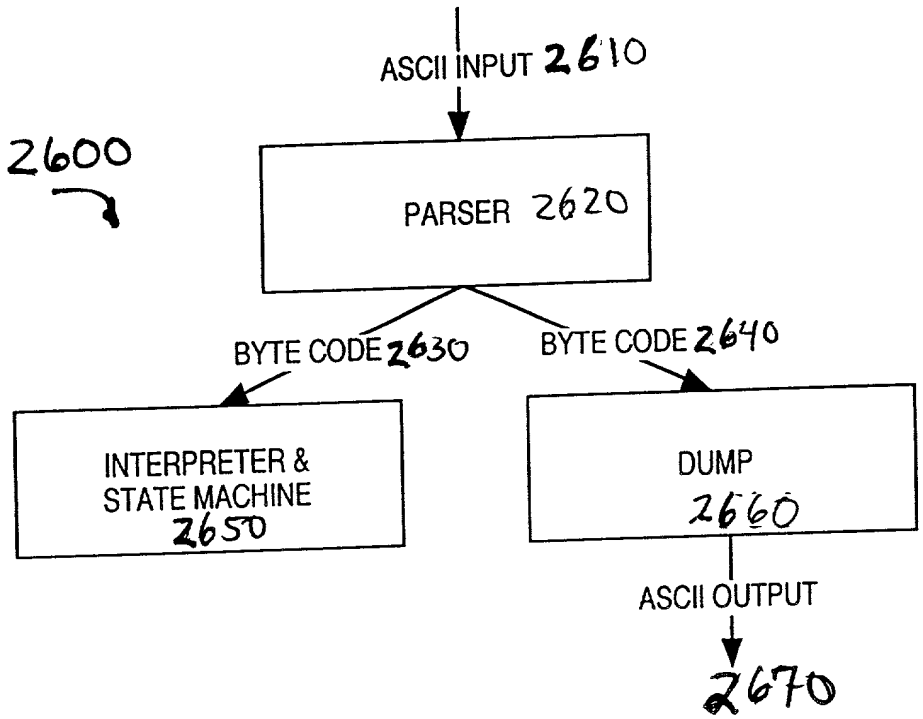

ASCII INPUT 2610
2600
PARSER 2620
BYTE CODE 2630
BYTE CODE 2640
INTERPRETER & STATE MACHINE 2650
DUMP 2660
ASCII OUTPUT
2670

FIG. 26

```
BEGINCLASS COREBUSINESSOBJECT
BEGINDATA
ENDDATA

BEGINMETHOD
INCLUDE HSKEL
PRIVATE:
# USED BY THE FINITE STATE MACHINE
VIRTUAL VOID FSM_INIT() { }
VOID FSM_ACTION_TIMEOUT(CONST CHAR* TIMEVAL);
VOID FSM_ACTION_THROW(CONST CHAR* MESSAGE);
VOID FSM_ACTION_RETURN(CONST CHAR* RESULT);
VOID FSM_ACTION_SEND(CONST CHAR* VALUE);
PUBLIC:
ENDINCLUDE

# TO CONIFIGURE THE FSM
METHOD      VOID   FSM_LOAD_DOLSIB {STRING FILENAME}
# TO TRIGGER AN EVENT IN THE FSM
METHOD      VOID   FSM_EVENT    {STRING NAME}  {STRING VALUE}
METHOD      STRING FSM_RESULT
# TO SET/GET VARIABLES FROM FSM
METHOD      VOID FSM_SET_STRING {STRING NAME} {STRING VALUE}
METHOD CONST STRING FSM_GET_STRING {STRING  NAME}
METHOD      VOID   FSM_SET_INTEGER {STRING NAME} {INT VALUE}
METHOD CONST INT   FSM_GET_INTEGER {STRING NAME}
ENDMETHOD

ENDCLASS
```

FIG. 27

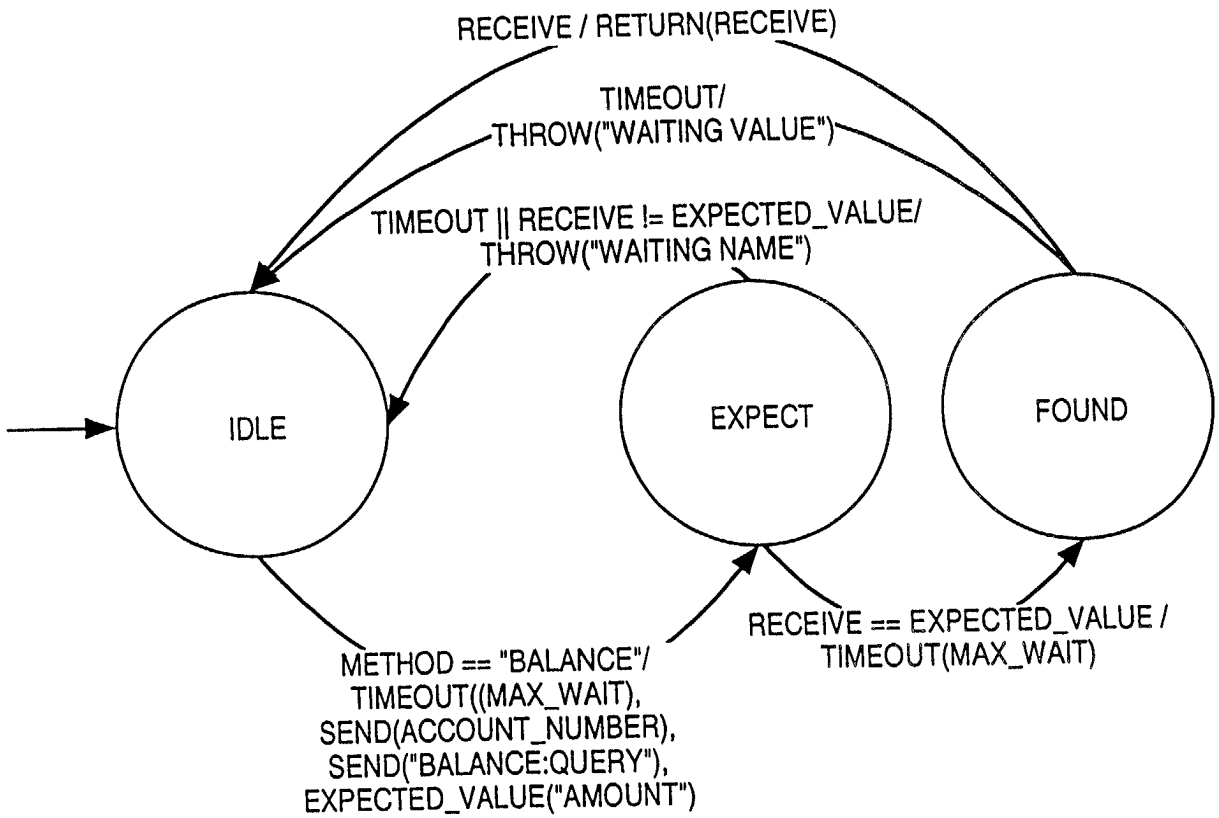

RECEIVE / RETURN(RECEIVE)
TIMEOUT/
THROW("WAITING VALUE")
TIMEOUT || RECEIVE != EXPECTED_VALUE/
THROW("WAITING NAME")
IDLE
EXPECT
FOUND
METHOD == "BALANCE"/
TIMEOUT((MAX_WAIT),
SEND(ACCOUNT_NUMBER),
SEND("BALANCE:QUERY"),
EXPECTED_VALUE("AMOUNT")
RECEIVE == EXPECTED_VALUE /
TIMEOUT(MAX_WAIT)

FIG. 28

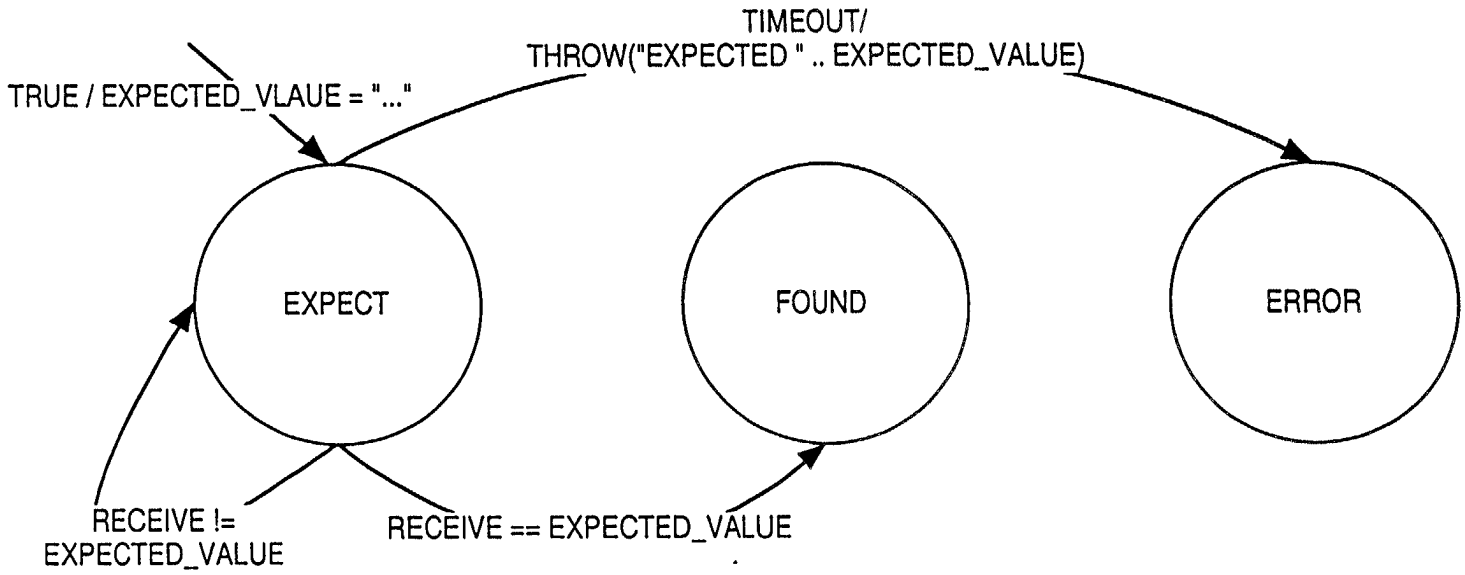

TIMEOUT/
THROW("EXPECTED " .. EXPECTED_VALUE)
TRUE / EXPECTED_VLAUE = "..."
EXPECT
FOUND
ERROR
RECEIVE != EXPECTED_VALUE
RECEIVE == EXPECTED_VALUE

FIG. 29

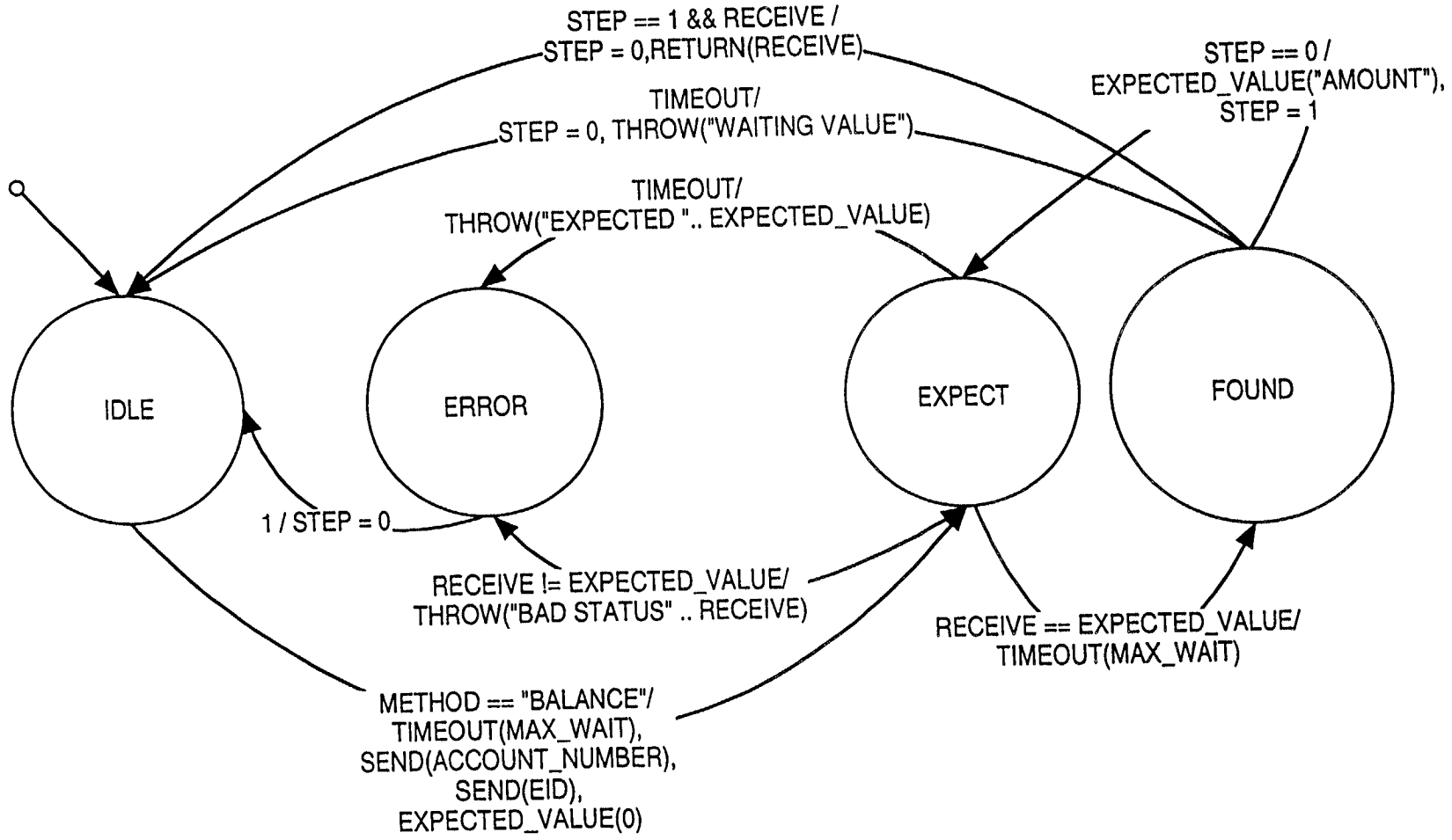


FIG. 30

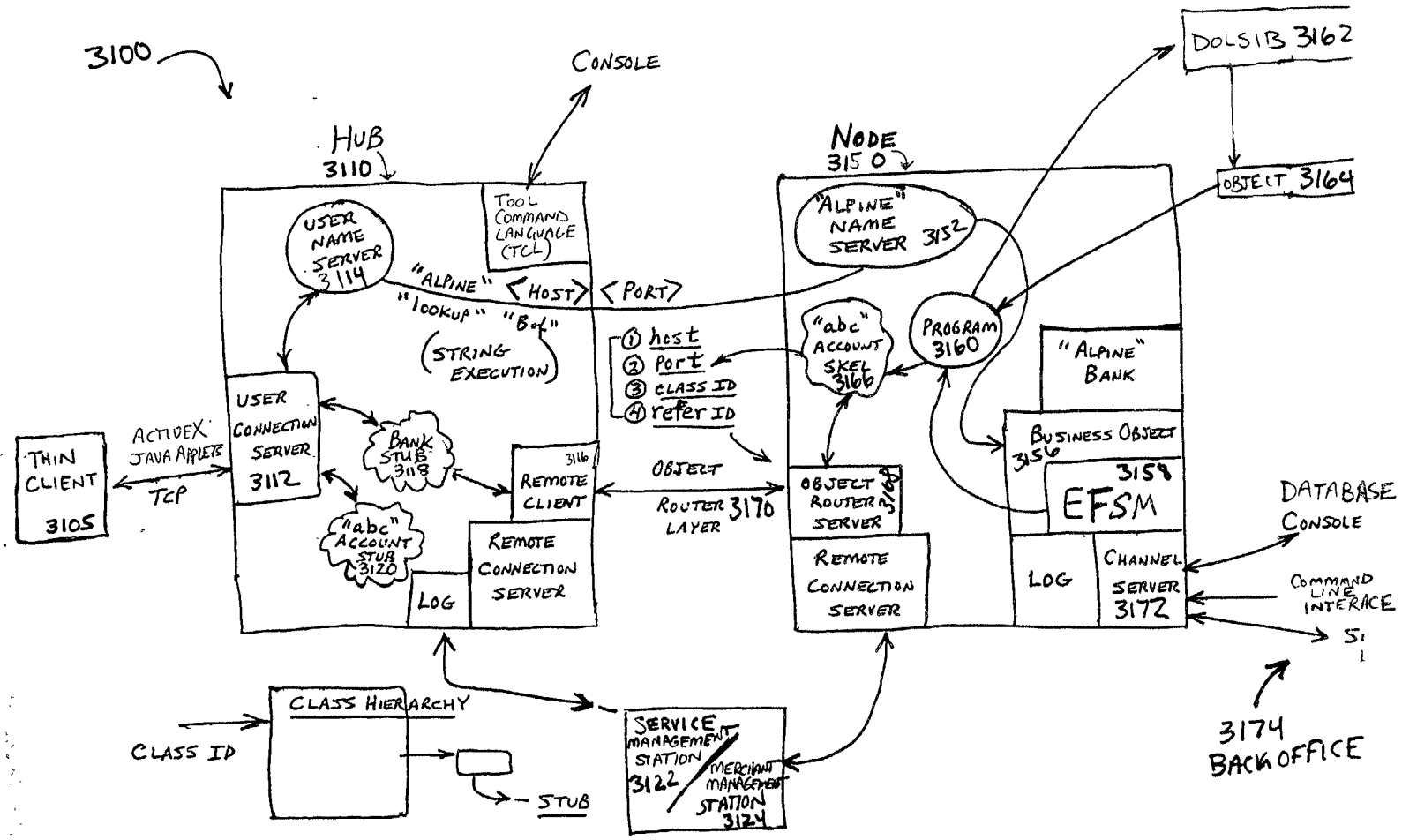
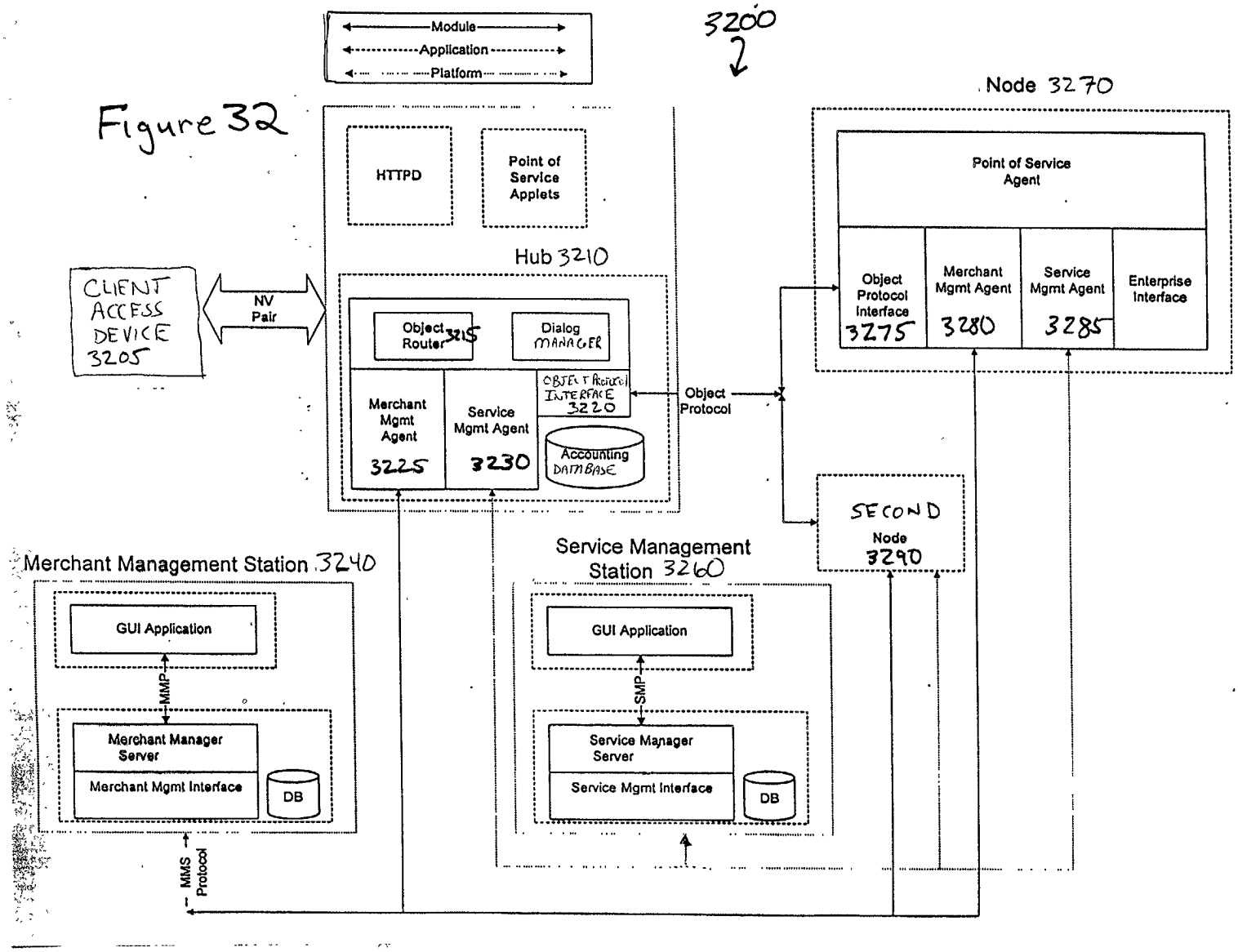

3100
CONSOLE
HUB
3110
NODE
3150
DOLSIB 3162
OBJECT 3164
TOOL COMMAND LANGUAGE (TCL)
USER NAME SERVER 3114
"ALPINE" <HOST> <PORT>
"lookup" "bof"
(STRING EXECUTION)
"ALPINE" NAME SERVER 3152
"abc" ACCOUNT SKEL 3166
PROGRAM 3160
"ALPINE" BANK
BUSINESS OBJECT 3156
EFSM 3158
1 host
2 Port
3 class ID
4 refer ID
THIN CLIENT 3105
ACTIVEX JAVA APPLETS
TCP
USER CONNECTION SERVER 3112
BANK STUB 3118
"abc" ACCOUNT STUB 3120
REMOTE CLIENT 3116
OBJECT ROUTER LAYER 3170
OBJECT ROUTER SERVER 3168
REMOTE CONNECTION SERVER
LOG
CHANNEL SERVER 3172
DATABASE CONSOLE
COMMAND LINE INTERFACE
CLASS HIERARCHY
CLASS ID
STUB
SERVICE MANAGEMENT STATION 3122
MERCHANT MANAGEMENT STATION 3124
3174 BACK OFFICE

FIGURE 31



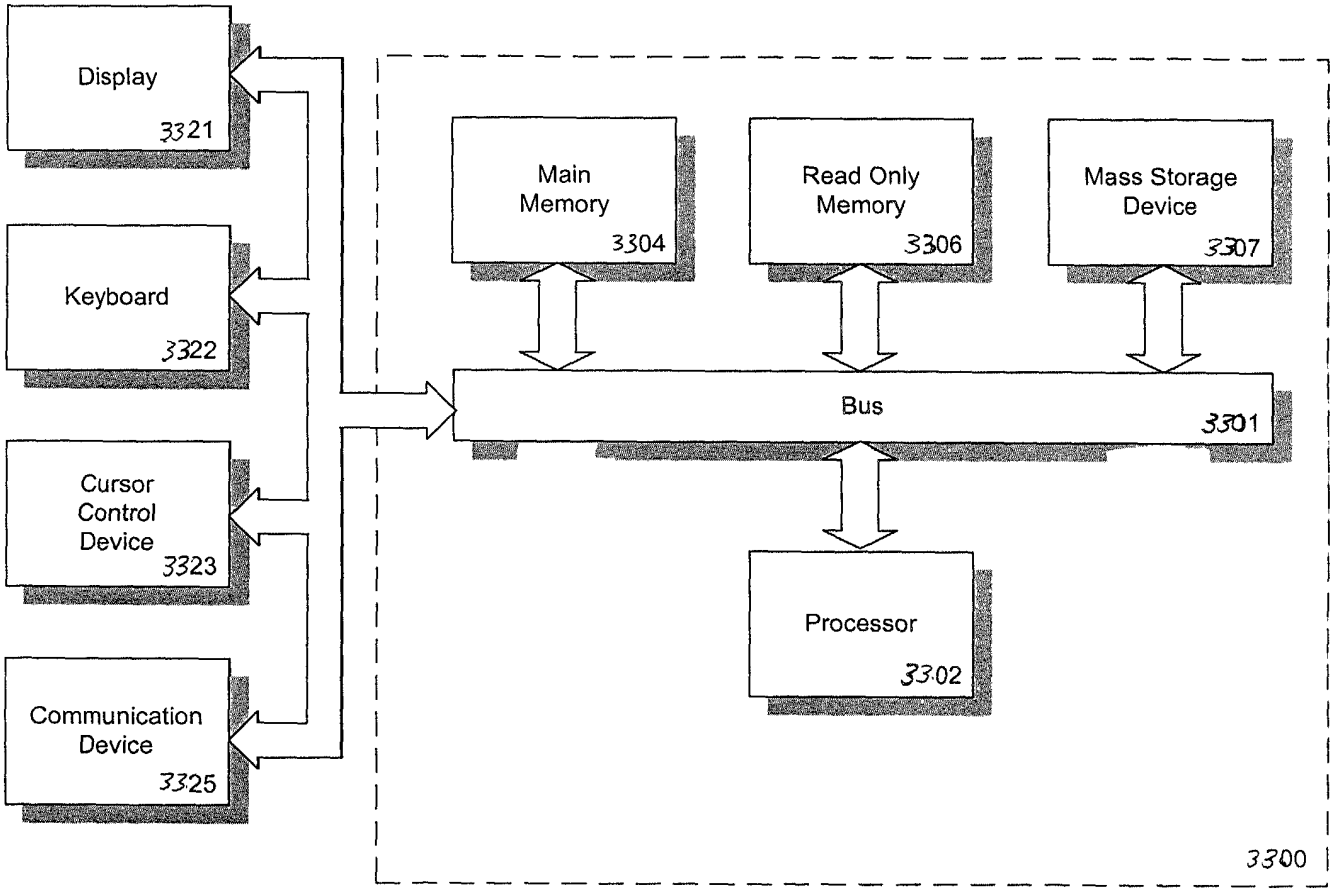


Figure 33